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volume **one**

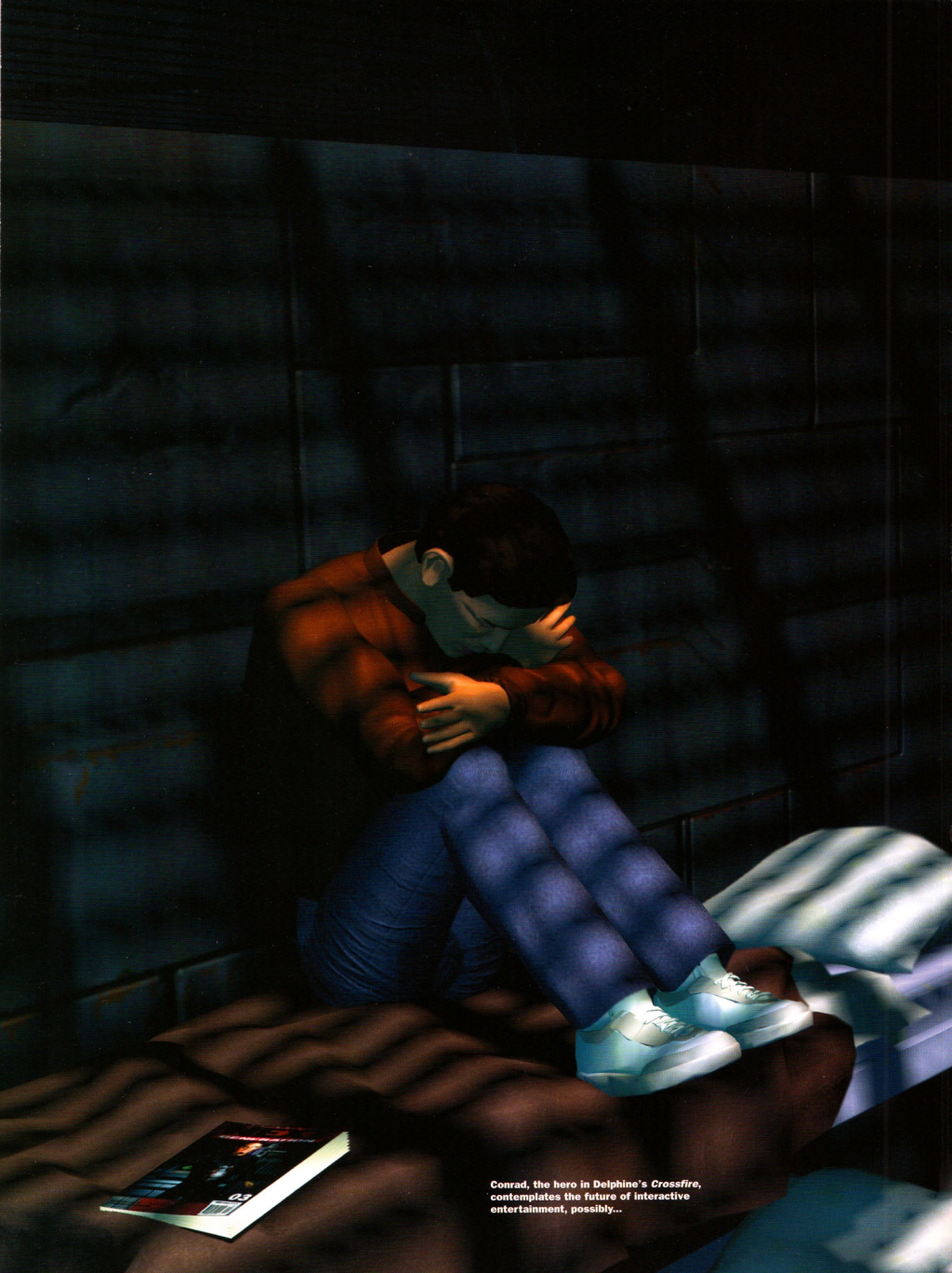
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3DO Fights Back: Trip's M2 add-on is "10 times the power of Sony's PlayStation," page 36



Conrad, the hero in Delphine's *Crossfire*, contemplates the future of interactive entertainment, possibly...

Games without frontiers?

Buffeted by the winds of fickle consumer fashion and perpetual technical **innovation**, each inch of forward progress earned by the PC game scene is the result of a hard-fought battle. In a liquid state of seemingly random creation, each individual product seeks to tug the industry in a new direction.

The development community is in a **gold rush** mentality. Riding the technological wave of constantly increasing system power, each new game has to push the envelope, or risk **obsolescence**. The industry is littered with the remains of game companies that delivered too little or too late. But every now and then — and usually from out of nowhere — someone hits **pay dirt**. A **quantum leap** is made, and PC gaming never looks back.

Alone in the Dark was one example.

Doom is another.

And now many pundits are looking at ***Heart Of Darkness*** from Amazing Studio, and — even more significantly — the 3D environment of ***Crossfire*** from Delphine to do the same again. Both games push the boundaries of **graphics**. Both games are the result of huge financial investment — and the labor of love. And both games offer that crucial dash of **quirkiness** necessary to fire the **imagination**.

For a **first look** at what could well be the **next** **big** **thing**, turn to page 58.

NEXT GENERATION

June 1995

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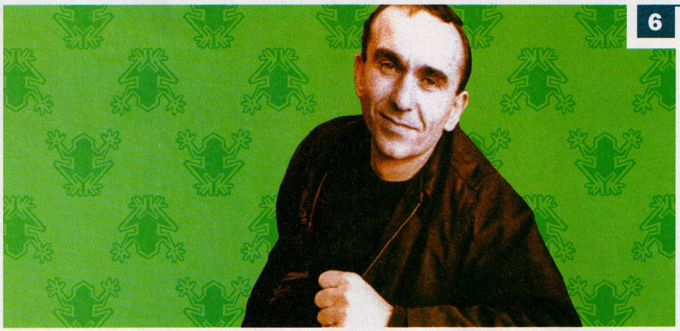
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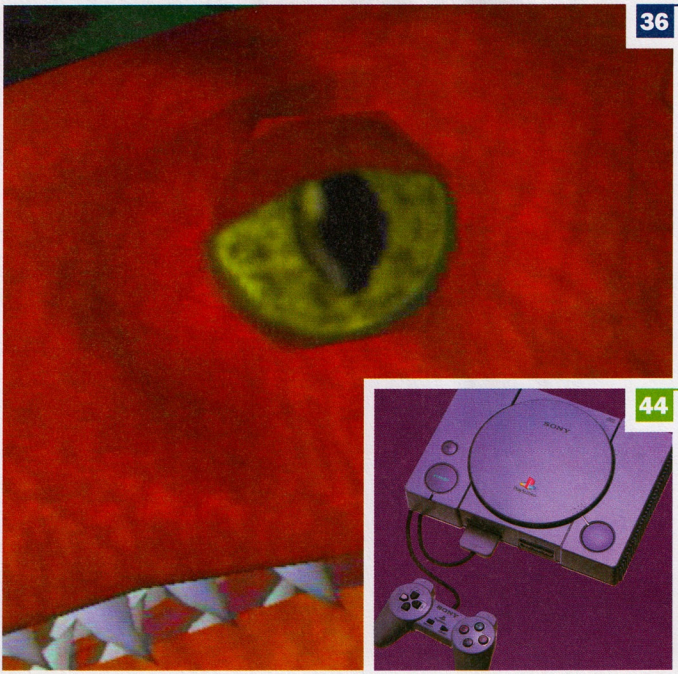
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Peter Molyneux: the smartest guy in gaming?
Bullfrog Productions is responsible for some of the greatest games of all time. *Populous*, *Syndicate*, *PowerMonger*, *Theme Park*, and *Magic Carpet*, all have set new standards. Bullfrog's leader is Peter Molyneux, and here he offers his unique perspective on the gaming world



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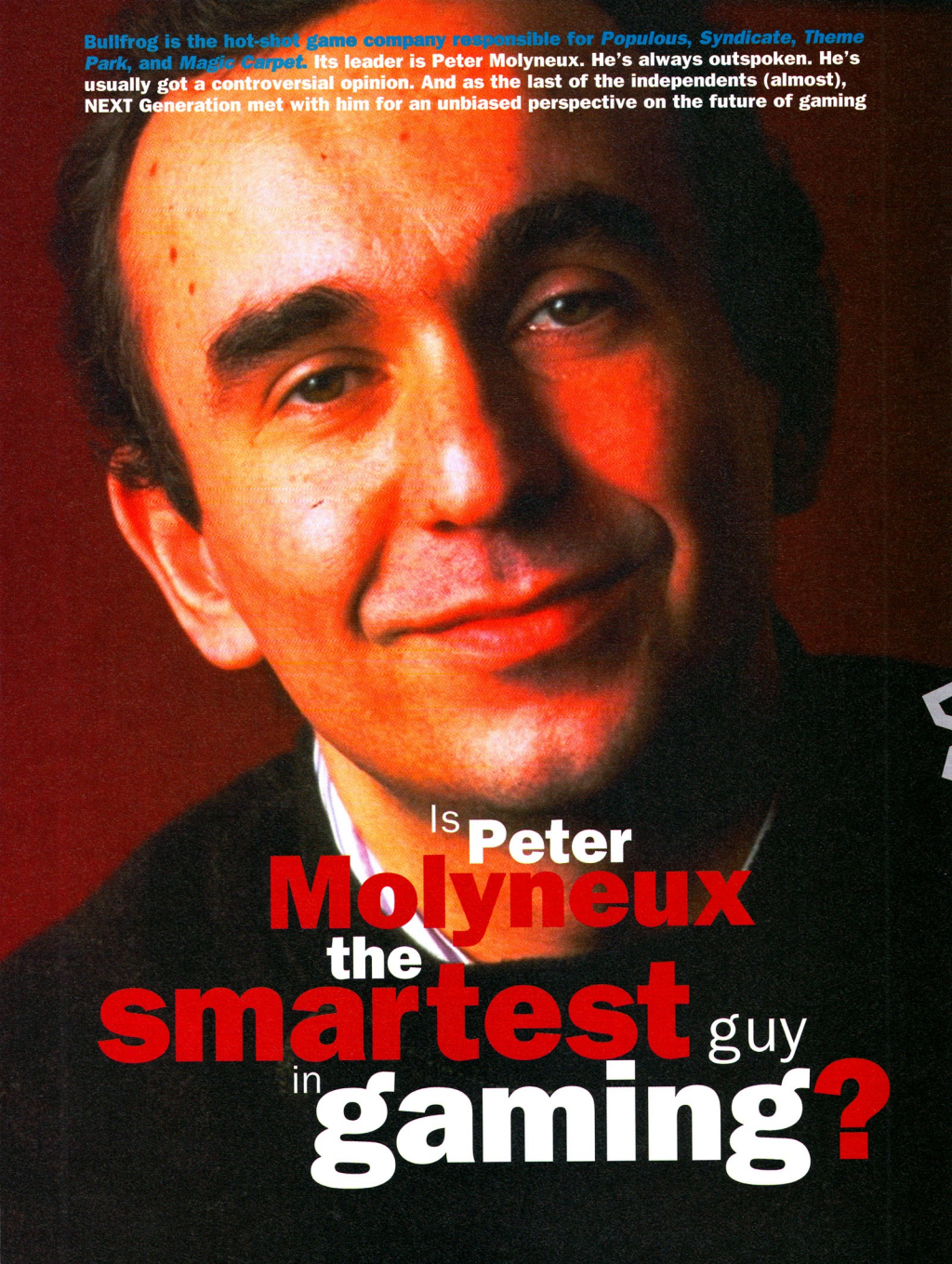
HEAD FOR SATURN

To really understand what life is like on Saturn, look inside your head. There, in the inner realm of rods and cones, of optic nerves and ear drums, is where the Sega Saturn experience breathes. Three 32-bit orchestrated processors, 16.7 million colors, lightning-quick texture mapping, connoisseur-class surround sound, and amazing first-person perspectives immerse you in worlds of entertainment you've never experienced. Sega Saturn is like nothing else on Earth.

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SEGA SATURN™

IT'S OUT THERE.



Bullfrog is the hot-shot game company responsible for *Populous*, *Syndicate*, *Theme Park*, and *Magic Carpet*. Its leader is Peter Molyneux. He's always outspoken. He's usually got a controversial opinion. And as the last of the independents (almost), NEXT Generation met with him for an unbiased perspective on the future of gaming

Is Peter Molyneux the smartest guy in gaming?

Over the last six issues, **NEXT Generation** has exclusively interviewed the men in charge of Sega, Sony, and 3DO. We've also talked with Shigeru Miyamoto — surely the world's most influential game designer — and Nolan Bushnell, who, with the invention of *Pong* in 1972, started the videogame bandwagon rolling.

Peter Molyneux is different. He doesn't have a game system to defend or a corporate line to promote, and so therefore he has no biased opinion. What he has is an unrivaled track record of great games from Bullfrog — his UK-based game development company — and a unique perspective on just where gaming is headed.

NEXT Generation met with Peter to find out just what lies ahead for gamers about to enter the next generation...

Betting on the right horse

NG: As an independent spectator of the next generation drama unfolding, what do you think of the show so far?

Peter: The most interesting thing is the amount of hardware that is actually coming out. Everyone and his dog seems to be producing a next generation machine, but what a lot of people seem to forget is that it just takes time to produce software for these machines.

What they also forget is in the end, the consumer, the person who actually buys the game and plays the game, doesn't really care how many bits and bites and DMA channels and DSP chips there are in the machine, they just care that there are brilliant games on the machine.

So, every time we sit down to produce a new game for a new machine we're starting with a blank piece of paper and we've got to find out about the machine, find out all the details about the machine — and it just takes the longest time. So, the result is that we're seeing very (I wouldn't like to say shallow, that's probably the wrong word), but you're seeing fairly poor games being produced because its the best that the software engineers have been able to do in the limited amount of time made available to them.

If you consider that 18 months ago the 3DO was released, and now the PlayStation and Saturn have come out together in Japan; this year there's the possibility of a machine coming out from Nintendo, there's Sega's Neptune and the Virtual Boy... and for all these machines, someone, somewhere in the world has to write the software for it. And there simply aren't enough developers around for them all.

NG: Do you think that some of those machines will fail through lack of decent software support?

Peter: They have to, yes. They have to. I mean, the market just cannot support the number of machines that our rumored to come out and that are already out.

NG: This would also imply that it's impossible to judge a machine's strength at the start of its life?

Peter: The Genesis was out for two years before *Sonic* came out. It took software engineers a long time to come up with the concepts. For us, it's like betting on a horse race. Which horse is going to come in? Not necessarily the fastest. But it could be down to marketing. It could be down to something as simple as the question: Which of these new generation machines has the best three games available for it?

NG: The gaming industry always seems to settle down into a duopoly, with two main formats fighting it out. The Game Boy and Game Gear have carved up the handheld market between them; the PC and Macintosh are in perpetual battle and, most recently, the Genesis and Super Nintendo have ruled the 16-bit roost. Do you think the 32-bit, next generation market will follow the same trend?

Peter: I think it's more scary than that.

NG: It'll be just one?

Peter: My awful fear is that what's going to happen is what happened with the Amiga. The Amiga was vastly successful in Europe but wasn't even vaguely successful in the US. The PC is huge in the West but it never made any inroads into Japan at all.

And that is the biggest nightmare for the development community. Because you then end up with each territory having only two or three really popular machines, but a total of six or seven across the globe which you have to support.

The 3D revolution

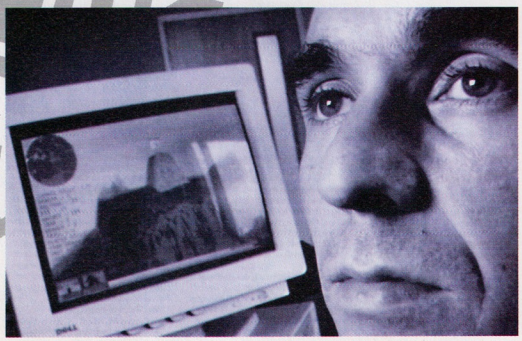
NG: Many people make the analogy between the move from 16-bit to 32-bit in our industry as being as monumental as the move from black and white to color films in the movie industry. This increased processing power enables game designers to create real time 3D worlds, instead of just the 2D environments of, say, *Sonic The Hedgehog* or *Mortal Kombat*. Seemingly everyone is rushing towards 3D. Is it really such a big deal?

Peter: People seem to forget — and this is a scary one — that the software industry doesn't know how to write 3D games. I mean, I'm sorry we really don't. I mean the only 3D game previous to this generation of machines coming out were really flight sims.

There wasn't this great plethora of 3D games that everyone is expecting. I mean everyone is excited about the 3D stuff, and the fact that we can do all these wonderful 3D-like games, but really, we've got no experience in the software industry of doing that, and that experience actually takes quite some time to accumulate and get to grips with.

And I don't see it so much as a move from

"Either we're very, very clever chaps and Hollywood has been doing it wrong for the last 100 years, or perhaps we're talking out of our asses"



Peter Molyneux burst onto the world's gaming stage in 1989 with *Populous*, a game typical of Bullfrog's art: functional graphics, but with brilliant artificial intelligence and superb playability

"Designers are thinking 'We can just churn this stuff out and slap that into a game, it looks fabulous on the pages... and as long as we don't let the reviewers see it for too long, it will get a good score'"

color to black and white, because I don't think we're anywhere near that stage with the movie analogy. I think the change is moving from a stereoscope — you know the things you've got on the pier — moving up to getting motion pictures going with nontalkies. There's a lot of evolution before we reach the end of the technology barrier.

NG: We're fairly down on that learning curve, on the evolution of it?

Peter: Oh, very much so. The thing about 3D is that it allows us to create environments that look like the real world. Like, for instance, I'm standing in an office at the moment and on the Ultra 64, PlayStation, or Saturn, I can recreate that environment almost photorealistically.

Now, the problem is similar to the problem faced by high definition TV. High definition TV hasn't taken off for a couple of reasons. One reason — strange as it may seem — is that in a movie studio, if you're shooting for high definition TV, you see every spot, every pimple, every line or wrinkle on an actress' or actor's face.

The same is true for a 3D environment in as much as you've got to think about where every chair is, every bit of trash, where every window, piece of furniture, or person is — and to keep track of it. And that is just a huge amount of work. It's great to have that freedom but it's scary to have to think about every aspect that the freedom gives to you.

NG: What are the other problems that presently face 3D game developers?

Peter: One of the other biggest problems with 3D is that you have to get the person who's playing the game to interact in that 3D. And that dear old joypad that we're used to was designed to play 2D platform games or 2D fighting games — not 3D games.



Bullfrog's *Magic Carpet* is currently being converted for PlayStation, meanwhile PC development continues apace

Now, there's a big problem. No one has really paid attention enough to what the person has to do to when they have to move through 3D space. And how do you do it with a 2D joypad?

NG: It's almost like the only part of the gaming deal ready for 3D is the machine itself — everything else, the designers, the joypads, the game companies, are still stuck back with 2D tools and unrealistic expectations.

Peter: Which is why everyone's kicking up so much fuss. Now, everyone is sitting down and realizing that it's bloody hard to design games for 3D, and trying to take the old tried and tested concepts like platform games and convert them into 3D games is really tough to do.

What the consumer is expecting is this huge revolution — as you said — this leap from black and white to color, everybody is expecting these amazingly original, innovative games that enable you to do absolutely anything. But this freedom, from a game designer's point of view, is the most horrific thing you could possibly imagine.

NG: There would be no point to *Pac-Man* if he could chew through the maze walls.

Peter: Just to balance a Sierra-like adventure game is bloody tough to do — and people have been doing these games for years, within known and established constraints. Now doing that within this even more detailed 3D world, which supposedly offers the player complete freedom, is well, I wouldn't say impossible, but is going to take a long, long time to do.

NG: It all sounds very pessimistic. Do people expect too much from the next generation?

Peter: Partly. In the end, a lot of consumers are going to be very disappointed by what they get in the next generation of consoles. They'll say "This is not what we expected."

They're going to end up with beautiful titles, there's no doubt about it, but they're not going to be titles that are going to make you sit down with your machine and not have sex for a week, or sit down and forget about TV, or not go out on a summer's day — which is what everyone expects the next generation to do.

NG: Let's assume that these are just teething problems. Do you think that in three years, we'll be able to look back and say that gaming has, in fact, evolved and improved?

Peter: Oh yes. I mean, when something needs to happen, it always does. Eventually games will genuinely improve, but there'll be a lot of people who have fallen by the roadside in the meanwhile.

The use of prerendered graphics in games is one example. Everybody caught onto the idea of buying a couple of SGI workstations and saying "Gee, we can use this Silicon Graphics stuff and it just looks fabulous. We can churn this stuff out and slap it into a game, it looks fabulous on the pages... and as long as we don't let the reviewers see it for too long it will get a good score."

But now, what we're seeing is that people are actually shortening down the amount of prerendered sequences they've got in games because the game players basically turned around and said "Enough is enough. I've paid $70 for this and now I just want to get on with the game."

NG: Are there any other problems which need to be tackled?

Peter: The current trend in games like simulations, adventures, and some sports sims, is that they are getting progressively harder, more clever, and more challenging. But this doesn't necessarily make them better games.

The trouble is that a lot of games are getting so hard that only the very best gamers can play them. The first rule of game design is that you mustn't produce games that are too complex for people to play.

I'm thinking directly of games like the *Ultima* series, which developed from an accessible thing, around *Ultima III* or *Ultima IV*, into a huge monolith-type underworld that was so all encompassing, so big, that it… well, I was reading in one review that the game starts to get good after about four hours.

So I think, do I *really* want to invest four hours in something that may or may not be any good at all? Games that are overly complex are good only as long as the complexity doesn't get in the way of the game.

Shooting the interactive movie?

NG: Between the real games and the prerendered graphics lie the "interactive movies." Many people in the game community see these as the way forward, but many others feel that the concept is fundamentally flawed. Do you agree?

Peter: Everybody's doing "interactive drama" with "interactive plots" and "interactive characters." But I think that it's going to be a tough, tough thing to do. Hollywood spends millions of dollars on scripts. It has hundreds and hundreds of scriptwriters and yet it gets it right only once or twice a year, if that. And little game designers like us are coming along and we're going to write this script which is going to have infinite variations, is going to be as entertaining as any Hollywood film, is going to have cinematic sequences in it, and we're going to sell it for four times more than you can buy a video for.

There's something wrong there. Either we're very, very clever chaps and Hollywood has been doing it wrong for the last 100 years, or perhaps we're talking out of our asses.

NG: But obviously, there's a lot right about the interactive movie concept — even if the attempts to create them in 1995 are flawed. Gaming is heading irreversibly toward more realistic, interactive virtual worlds. So what hurdles need to be negotiated along the way?

Peter: Well, the development of 3D technology — for how the future of gaming will look — is done now. The processing power is on a chip and it's sitting either in machines that are being sold now, or in machines that will be sold soon.

Now we have to worry about the environments that we build. At the moment, it's relatively easy to imagine playing a fighting game in a street with cars going along, with lamp posts that you can pick up, and there are women pushing babies in strollers. Now, that's not an interactive movie but it is like playing on a movie set where anything is movable and destroyable.

The real trick now is to give the world a realistic personality.

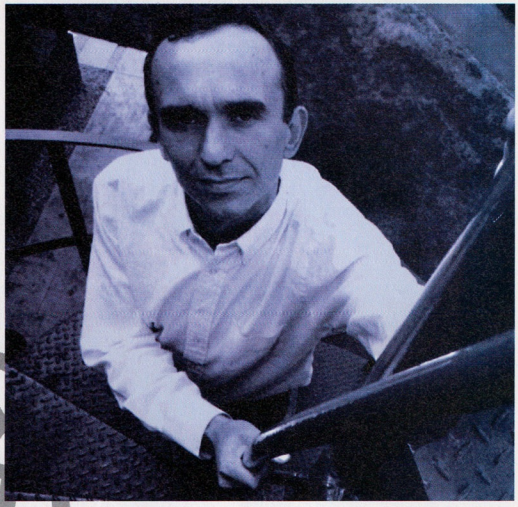
NG: How is this to be done?

Peter: To achieve that, the software industry has to start concentrating on artificial intelligence.

Since the 1970s when the concept first was brought to the public eye, artificial intelligence has been completely out of fashion. Now, the amazing thing that's happened is that the entertainment industry is pulling artificial intelligence back into the limelight. The artificial intelligence problems of the '70s now are being cracked by scientists in the universities — and by game developers.

Now this is an absolutely incredible turnaround in the computing industry. But the game designers have to drive this forward because if we're ever going to approach interactive movies, we're going to need artificial personalities. And to have artificial personalities you need to have artificial intelligence.

Up until that point in the process, every single thing has to be drawn and choreographed by an artist, but once you have artificial personalities then there are no limits — all of a sudden the world will start to *generate itself*. And this will mean a really true revolution in games.



Up and coming titles from Bullfrog include *Theme Hospital, Super Heroes, Creation, Dungeon Keeper, Magic Carpet 2,* and *Biosphere*

NG: And in the meanwhile?

Peter: In the meanwhile, of course, we'll see lots more videotaped movie footage — in fact, I would bet any amount of money that Arnold Schwarzenegger will be signed up for an interactive movie this year.

"Interactive movies" will come and go, just like everything else comes and goes.

NG: And Hollywood will continue down (what could well be) the wrong path?

Peter: I think that Hollywood will only become increasingly interested. And even beyond that, there are much larger companies which have got no knowledge of the game industry but have billions and billions and billions to spend and are just snapping things up.

In some ways, it's great because they've got the money to burn. In other ways, it's really depressing because those companies are going to make some very bad decisions and they're going to lose an awful lot of money.

You'll get all these games coming out with all the Hollywood input, but they'll be complete shit.

Behind the scenes

NG: Can you give us a little bit of perspective of just what has been going on behind the scenes of the game business over the last couple of years?

Peter: Well, the thing that started this snowball rolling was, of course, 3DO. Trip Hawkins stood up and said this is the new generation of machine this will go into every house, every home. I remember the first developers conference and everyone was really, really excited and really, really

"There aren't going to be titles that are going to make you sit down with your machine and not have sex for a week — which is what everyone's expecting the next generation of games to do"

talking

scared because everyone realized this new machine was using technologies that we just simply hadn't had access to before.

With the Super Famicom [SNES] and the Genesis, the technology was essentially eight or nine years old. Suddenly, up comes somebody and says forget all that, this is how it's going to be. It's got a CD drive, it's got all this cool vector mathematical stuff, and this buzz pushed — and this is a personal opinion — people the likes of Sega and Sony into releasing its machines early.

They basically thought that they couldn't let 3DO get a major foothold in the market place with a new generation machine. And that started the whole next generation development snowball rolling. As soon as you heard about the 3DO there were rumors about the Saturn and the PlayStation, and then developers started scrambling for 3DO development stations, got them,



were a little disappointed by its performance, and then there were more and more rumors coming out about the PlayStation and the Saturn. And in the background there was a cool relationship between Nintendo and Silicon Graphics.

The whole thing really has become one frantic race to get really hot titles on really, really new machines. And in the most part, I would not say in every part, developers have concentrated on the *look* of the game rather than on the playability of the game. I mean you're really seeing some stunning, stunning sequences in games. But the actual gameplay underneath is really very, very shallow.

NG: So, as it stands now, could you give us your own personal opinion on the strengths and weaknesses of each next generation system? So, let us start with Sega's new system, Saturn.

Peter: [laughs] Right, OK. I'm going to have to be diplomatic here, you realize, because I want to work with these people. So, I'm not going to rag on anything, but I'll certainly point out the strengths, and you can read into it what you will.

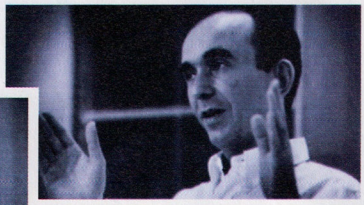
Saturn is an interesting machine and certainly has a lot of little cubby holes that the programmer can play around with, and its multiprocessor environment makes for interesting programming.

NG: Sega's main strength is its brand name and its arcade division, would you agree?

Peter: Absolutely. It's hugely valuable for Sega. It can put *Daytona* on the Saturn and that will make it a very powerful machine. The whole arcade division will pay off huge dividends for the company. It can try out new generation titles in the arcades before releasing them, perfect them for the console and then they've all got the street hype that *Virtua Fighter* had.

NG: But the PlayStation is your personal favorite right now?

Peter: At the moment I'd have to say it's my personal favorite. I mean it's really well designed. If you look inside, then obviously the full experience of Sony as electrical



"We can now use [the SNES and Genesis] as the doorstops they should have been years ago. I've always disliked them. As a designer I've despised them. Thank God they're going"

engineers has come to bear on it and they've just spared no — absolutely no — developing costs in developing the technology for the machine and it's a superb design inside, the controller feels really nice, especially in Japanese hands.

Inside it's fast, it's efficient, it's simple to use and it's well laid out. So, yeah, the PlayStation is really nice.

NG: What else is good about Sony?

Peter: I think that when Sony does something, it probably does it right. And it has decided to come into the game business and it hasn't got all the hang-ups that a lot of its competition has. They haven't picked up any bad habits. And they haven't got teams of programmers that they have to support who say "We want to do *Mario 5*." They're coming into it from a purely "This is what we can produce" angle. And it's got an impressive spec. It easily outperforms any machine currently out there. Sony is one of the largest electronic producers in the world. The PlayStation has bags of processing power, lots of chips, and it works in the same way as *Magic Carpet*, so the conversion should be a breeze!

NG: What about Ultra 64?

Peter: Well, that's the big one isn't it? Nintendo is a hugely powerful company and you can't take that away from it. It's got a very, very, very fast machine which is based on Silicon Graphics chips. So, we all know it's going to be hugely fast.

NG: How do you feel about cartridges?

Peter: I've heard that because they're looking to squeeze a lot of stuff onto the cartridge then they have to take it off compressed — which means that the benefit of the cartridge goes. However, if they've solved this problem, then the extra ROM is going to be very useful indeed.

NG: What about the Jaguar.

Peter: The Jaguar… Well it's all a bit too late for the Jaguar (I was trying to say that with diplomatic



lines, but it just wouldn't come). If it comes down to an attractive price point, then people will buy it. But, it's been out there a while and there hasn't been any groundbreaking titles for it yet. Certainly the development that I know isn't focusing on Jaguar at all.

NG: So if Jaguar fails does that mean its game over for Atari as a whole?

Peter: They've got plenty of lawsuits left.

NG: 3DO?

Peter: Well, M2 looks like awesome technology, it's fantastically fast, and hopefully they're going to learn from all the problems they had with the first 3DO. It's a price issue. Just look at the Neo-Geo. It was always a very sexy piece of kit but never sold because it was too expensive.

NG: Are you sad, at all, to see the SNES and Genesis on the way out?

Peter: It's good news. Those horrible consoles are finally out of the window. We can now use them as the door-stops they should have been years and years ago. I've always disliked the SNES and Genesis. As a designer I've despised them. Thank God they're going. ng

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2 PLAYER

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PC Gamer magazine described FX Fighter as "ground-breaking." And we're grateful. But to be honest, with all that power sitting on the desktop, we just felt that the last thing the world needed was another damn word-processor.

Flying 3D Camera. Not just a highlight film, the point-of-view changes as you attack.









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ECTS: PlayStation dominates European trade show/**p.14** • **DVD:** video on CD/**p.16** • **Jaguar:** Atari gears up for launch of Jaguar CD/**p.18** • **Coin-ops:** Japanese next generation coin-ops on show/**p.22** • **Videogame school:** Nintendo's DigiPen on CD/**p.25** • **Arcadia:** coin-op news/**p.27** • **Joyriding:** gaming news on the Internet/**p.28**

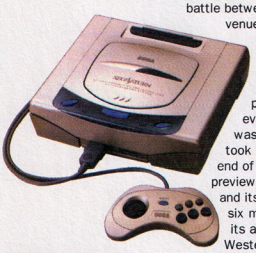


Gaming news from the US, Japan, and Europe

PlayStation dominates European show

Trade shows are war, as each company pulls out its biggest guns to impress the crowds. Sony wins the biggest war in Europe...

Spring's European Computer Trade Show (ECTS) recently gave the UK game industry its first taste of the impending hardware battle between rival companies. The venue was at Olympia — instead of the regular site, the Business Design Center in London — and was attended by 8,500 people during the three-day event. This time the event was dwarfed by Sony, which took an enormous stand at one end of the hall to preview the PlayStation and its software just six months before its arrival in the Western world.



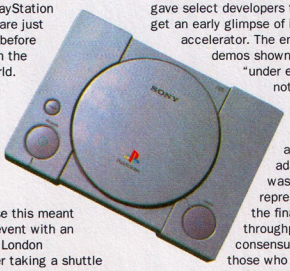
Sega chose to keep all its Saturn plans secret, relying solely on *Virtua Fighter* and *Daytona USA* to impress the hungry crowds. It didn't work

Rivals Sega, Atari, and 3DO all took different measures to ensure that their presence wouldn't be overlooked.

In Sega's case this meant piggybacking the event with an offsite affair at its London Headquarters. After taking a shuttle bus to the company's building, visitors were ushered into a dark, dry ice-filled room, and made to watch a presentation which included Flash Gordan-style actors and a rising dome contraption that tantalizingly revealed Sega's black console to an underwhelmed audience.

A rising dome contraption tantalizingly revealed Sega's black console to an underwhelmed audience

This was the official unveiling of Saturn and, as such, played to the strengths of *Virtua Fighter* and, prior to its Japanese debut, AM2's conversion of *Daytona USA*. While not as polished as people would have hoped, *Daytona* still managed to draw the crowds.



The 3DO Company took a small booth at ECTS, relying more on the corporate presence of its hardware licensees (including newcomers Goldstar this time) to hammer the message home. However, the company had good reason to feel pleased with itself — it won the ECTS award for best hardware. As well as some impressive software demos (see *BladeForce* on page 78), 3DO also gave select developers the chance to get an early glimpse of its M2 accelerator. The engineering demos shown on video were "under emulation" (i.e. not running from the hardware), but 3DO apparently was adamant that it was an accurate representation of the final graphics throughput. The consensus from those who saw the demos was that the M2's polygon handling is in a league of its own (see page 36).

One couldn't help feeling sorry for Atari. The company occupied an average-sized stand with lots of games to play, but it suffered from being stuck in the shadow of Sony's gigantic structure, even to the extent that Sony's PlayStation logo was

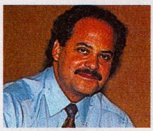
Looking forward to E³

If the ECTS (European Computer Trade Show) proved anything, it's that May's E³ show (Electronic Entertainment Expo) to be held in LA, will be the videogaming event of the decade. All the major players Sony, Sega, 3DO, and Nintendo have promised to reveal all of their complete systems, plans, and games.

NEXT Generation will bring you the full report in next month's issue, on sale June 20th.



3DO gave developers an inside scoop on its M2 hardware. A full report starts on page 36



Atari's Sam Tramiel spoke at length with NEXT Generation. His Jaguar and Jaguar CD are featured on page 18

permanently beamed all over Atari's black facade. What was more concerning was the perennial problem that undermines confidence in the Jaguar — a conspicuous lack of decent software. The polygon fighter *Fight For Life* lunged unconvincingly for attention amidst a plethora of titles which were either too slow or too 16 bit in design and concept. Despite this, Atari's President Sam Tramiel talked to **NEXT Generation** about the wealth of software in development (his words, not ours) and at least *Highlander* was on display, making appropriate use of the Jaguar CD.

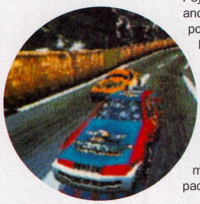


Is *Virtua Fighter* Saturn's single-handed fighting chance against Sony?

Sony's expansive — and

expensive — commitment to ECTS was a huge PlayStation arena sporting multiple booths each dedicated to a different game. The line-up of PlayStation titles was surprisingly familiar, however. Apart from *Starblade* and the massively popular *Tekken* (in arcade form as well as running on the console), there were only four other games on display — all of them already released in Japan.

Video-wall demos provided glimpses of other titles in development, though, including Capcom's *Darkstalkers* (coded by Psygnosis, in fact), SCE duo *Philosoma* and *Gunner's Heaven*, and a new polygon soccer game from Konami. In keeping with the European tradition, Sony rushed and tainted the game artwork that adorned the walls of their stand — the reproductions of the strong Japanese styles used in *Ridge Racer* and *Toh Shin Den* looked like the work of elementary school kids. Hopefully, more care will be taken with the real packaging for PlayStation games.



Sega 's *Daytona USA* will be reviewed next issue. Can it beat *Ridge Racer*?

No announcements were made regarding the price of the PlayStation for either the US or UK, although a figure of between $249 and $299 is still hotly rumored for the US, despite the fact that continued currency fluctuations could result in something rather less tolerable.



Atari's *Fight for Life* was humbled by Sony and Sega's 32-bit fighters

Competing software companies at the show had a tough job beating Virgin. Not only did the company win best marketing award and blow $413,100 on its futuristic stand (complete with purple-wigged vixens), but *Heart Of Darkness* (page 82) became the most talked about game of the show.

The game was previewed in a special presentation booth running shows every half hour. Those who saw it were extremely impressed with the quality of the prerendered graphics, although doubts were raised concerning the originality of its gameplay.

Electronic Arts was more modest about its accomplishments (winning best software publisher of the year being one of them), but the company had a good range of software to back it up, including Delphine's *Flashback* sequel *Crossfire* (see page 58) and *Crusader* from Origin — a superb-looking isometric adventure game. Bullfrog also teased a few journalists with glimpses of forthcoming projects including *Creation* and Peter Molyneux's latest — *Dungeon Keeper* — which looks like being another classic for the PC. Some things just never change. ng



Insiders at ECTS predicted a further price drop for the Atari Jaguar — threatened by Saturn, PlayStation, and Ultra 64

Talent Wanted

NEXT Generation is looking for a writer to join its team.

NEXT Generation sets high standards and only the very best need apply. Relevant qualifications are useful, but we'll happily consider a vastly-motivated, undiscovered talent — just prove to us that you're the person for the job. We need someone who eats, sleeps, and breathes games; someone who can address themselves equally to a genre-busting fighting game or the next generation of rendering hardware; someone who knows why *Super Mario Bros 3* on the NES is a better game than *Donkey Kong Country* on the SNES (or someone who can convince us otherwise); someone who can handle the immense pressure of both tight deadlines and our ambition level for the magazine.

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DVD plagued by double standards

Shades of VHS vs. Betamax cloud the future of VideoCD's heir

Two rival camps are now pitted against each other in a bid to establish their formats as the DV standard for the next century

The battle lines have been drawn over the future of digital video. As reported in **NG 3**, Sony and Philips have already announced joint plans for a new high-capacity CD system that will make feature-length MPEG 2 recordings a viable proposition. Meanwhile, another consortium headed by Toshiba and Time Warner has revealed its own system. This means that two rival camps are now pitted against each other in a bid to establish their respective formats as the DV standard for the next century.

Philips and Sony demonstrated their new Digital Video Disc (DVD) system at the Winter Consumer Electronics Show (CES) in Las Vegas in January. DVD uses a single-sided 5" CD which is able to store an unbroken feature-length movie of LaserDisc picture quality with multichannel surround sound. But the two companies failed to demonstrate an important extra feature developed by 3M: By making two recordings at different depths on the same side of the disc, separated by a semireflective layer (like a two-way mirror), the playing time can be doubled from 135 minutes to 270 minutes.

The rival Toshiba/Time

Warner system has an even longer playing time (142 minutes), which it doubles by using a double-sided disc. This is made like a miniature LaserDisc by pressing two half-thickness discs and then gluing them together.

At the late January press launch in Hollywood, Toshiba and Time Warner proudly announced that they had won the backing of Panasonic, along with Hitachi, Pioneer, and Thomson of France. Matsushita (Panasonic/Technics) had been close to backing the Philips/Sony DVD system, but pulled out at the last minute after heavy lobbying from Time Warner. Company chiefs promised that Toshiba



Whichever camp wins the digital video format wars, Philips' current CD-i standard will be rendered obsolete in terms of video playback



While MPEG 2 is destined to become the new CD standard for home movies, MPEG 1 will meet the requirements of game platforms like the CD-i (The 7th Guest above)

Glossary

***VideoCD*: digital video version of the existing CD and CD-ROM, with pictures coded to the White Book standard using MPEG 1 compression and a fixed data rate of just under 1.5 MB/sec. Around an hour of VHS or slightly better quality video can be fit onto a single side.**

***Digital Video Disc* (no longer called HDCD to avoid confusion with a hi-fi tweak to the ordinary audio CD): movie or multimedia disc which uses smaller pits, MPEG 2 compression and a variable bit rate of between 1 MB/sec and 10 MB/sec. Two hours of broadcast quality video and up to 5 gigabytes of data can be recorded on a single side. Capacity doubled either by recording two tracks on a single side (Philips/Sony system) or by sandwiching two sides like a miniature digital version of an analogue LaserDisc (Toshiba system). Uses red laser for readout (not infra-red as in current CD drives or blue as promised for the more distant future).**

Data stream

Internet growth, third quarter, 1994: **21%**
Projected number of Internet users by 1999: **100-300 million**
Countries with fastest-growing Internet use: **Argentina, Iran, Peru**
Revenue generated by PC sales in 1994: **$8.4 billion**
Revenue generated by color TV sales in 1994: **$7.7 billion**
Number of excess cartridges Sony is offloading to retailers at $14 each: **1 million**
Number of software patents registered in US: **14,000**
Number of calls per day Microsoft expects when Windows 95 is released: **30,000**
Cost of *Street Fighter* film: **$41 million**
Number of Genesis *FIFA Soccer* carts sold to date: **500,000**
Number of hours average US resident spent watching TV in 1994: **1,529**
Value of pirated software in 1994: **$8.2 billion+**
Length of international phone calls made worldwide in 1988: **23 billion minutes**
Length of international phone calls made worldwide in 1993: **43 billion minutes**
Number of cups of tea drunk in the US in 1994: **8 billion**
Number of cups of tea drunk in the UK in 1994: **60 billion**
Fifth best-selling CD-ROM from the US Government Printing Office in 1993: **Toxic Chemical Inventory**
Size of Sony Computer Entertainment's ECTS stand: **46,000 feet²**
Number of Jaguars sold in Europe to date: **60,000**
Number of Jaguars sold in the UK to date: **30,000**
NEXT Generation's fave comic in 1994: **Horny Biker Sluts**

DVD players would be on the market by the first half of 1996 at prices of around $500, with double-sided movie discs at prices similar to audio CDs.

Sony and Philips went quiet while evaluating the Toshiba technology. Trade observers expected capitulation. But in late February, Philips and Sony publicly rejected a double-sided disc, while Toshiba reaffirmed its backing of the glue sandwich idea.

Philips and Sony also changed tack, laying more emphasis on the 3M option of doubling capacity by pressing two different recordings into one side and talking more about using the new disc for PC, game, and multimedia storage and a lot less about Hollywood movies.



The situation is now quickly becoming a rerun of the PR wars of the '70s and '80s between the rival VHS and Betamax home video systems, in which important technical issues were submerged under a wave of hype.

Toshiba has delegated Thomson to disseminate press information. But when asked the simple question "Where will the label go on Toshiba's double-sided CD?", Thomson could say only: "We are not disc manufacturers." This is unlikely to inspire confidence in the depth of Thomson's technical evaluation of the system it is promoting as a new world standard. Come on guys.

Faith in the Sony/Philips option is at a similarly low level. But Philips' Eindhoven lab recently demonstrated that the 3M concept really does work. The servo-control system for the readout laser locks onto either track and stays locked until switched to the next layer. The switch-over takes only a few thousandths of a second, which is much faster than turning over a double-sided disc or moving the readout laser from one side to another.

Philips has also raised some serious technical questions about Toshiba's blueprint. Toshiba achieves higher capacity than Philips (5 gigabytes per side compared to 3.7 gigabytes per recording layer) by making the data pits smaller. The numbers look impressive, but smaller pits are harder to master, harder to press, and susceptible to corruption by users' fingerprints.

Fingerprinting could drive Toshiba's system into caddyland. And this restricts the use of juke box storage units. An ultra-violet laser is also needed to cut master discs. Pressing plants have to re-equip, too, because the two halves of the Toshiba disc are half-thickness, necessitating different molds and plastics. And smaller pits need a smaller laser spot for readout. More expensive again.

Both systems use the same red laser with shorter wavelength than the infra-red lasers used to read today's CDs and CD-ROMs, but Toshiba uses a lens with a very high NA (numerical aperture) for tighter focus, and a nonflat disc is more likely to upset this tight focus. This is probably the real reason why Toshiba uses half-thickness pressings — focus tolerances are made easier by a thin pressing. But the half-thickness pressing lacks strength, which is the main reason for gluing two together — doubling capacity is a byproduct.

The snag is that a lens designed to play half-thickness pressings cannot also play back full-thickness ones, and putting two lenses into the same player creates servo control problems. If and when Toshiba shows high-density playback, the key issue will be how easily and cheaply the same player can cope with today's CDs and CD-ROMs. ng



The move toward high-density MPEG 2 discs should enable VideoCD to finally emerge from the shadow of LaserDisc (above), the current state of the art for home video

What is it?

Arguably the first game hardware to attain mass-scale must-have status. Such was its desirability that, at its launch in Japan, a *Yakuza* ring was rumored to be planning a raid on the first shipments

GP Publications renames itself Imagine Publishing

The company responsible for NEXT Generation has renamed itself Imagine Publishing, ushering in a new era for the San Francisco-based publisher responsible not only for your favorite read (you're holding it), but also *PC Gamer*, *The Net*, *Game Players* (the first US game mag) and *CD-ROM Today*.

Imagine has experienced rapid growth in the last two years. Chris Anderson, Imagine's president, says "Our strategy is to continually dream up great ideas for making our magazines better. The name 'Imagine' says it all."

NEXT Generation is pleased to report that sales of the magazine continue to defy all expectations, and that in our own little, way, we continue to laugh in the face of corporate hype and tweak the nose of substandard product. It's a dirty job, but...

Jaguar plugs into the CD revolution

Atari's delayed CD drive for the Jaguar finally prepares to ship

it is...

The Super Famicom, which made far bigger waves in 1990 than the PlayStation and Saturn could ever hope for today. Retailers even resorted to in-store lotteries when machine stocks began to run low

The Jaguar CD add-on, originally intended to be released in 1994, has now been scheduled for launch in June this year. The add-on will retail at $149 and be bundled with "more than one item," at least one of which will presumably be a game title (although exactly which one is presently undecided).

The peripheral is a straightforward plug-in device. As well as being able to play Jaguar CD games, it can be used for conventional audio CDs — in conjunction with the latest incarnation of Jeff Minter's colorspace project, *Virtual Light Machine*.

An all-in-one Jaguar CD unit will be released toward the end of the year. It will find itself in direct competition with the Saturn and PlayStation, which converge on the US market at around the same time. (The Saturn is slotted for a September 2, 1995 release date, although the latest rumors suggest that this date will be brought forward to late June.)

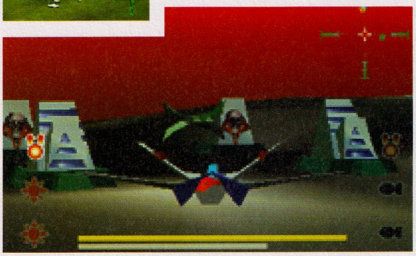


Cost was obviously a prime consideration during the development of the Jaguar CD: the unit has a slightly flimsy feel

Of course, it will be software that will determine the system's success or otherwise, and the initial line-up includes few titles of note. The one most eagerly awaited by Jaguar owners is *Battlemorph*, the sequel to ATD's Gouraud-shaded shooter, *Cybermorph*. The gameplay runs along similar lines to the original but there are additions, including impressive new underwater sections. (**NEXT Generation** will have a full preview of the game next month.)

Prolific Jaguar developer Rebellion has stated that it has no





Atari has yet to confirm it, but *Battlemorph* (above) is the most likely candidate to appear packaged with the unit. *Jack Nicklaus' Cyber Golf* (inset) is the first of a number of sports titles planned for the system



***Chaos Agenda* looks much like Elite's dull PC and 3DO title *Virtuoso*. Atari will be hoping to match its digitized characters with equally sharp gameplay**













Set to appear on Jaguar CD: *Demolition Man* (top); *Blue Lightning* (top right); and Argonaut's conversion of *Creature Shock* (above)

Readysoft's *Dragon's Lair* series looks set to hit every CD system ever made

The one most eagerly awaited title by Jaguar owners is *Battlemorph*, the sequel to ATD's Gouraud-shaded shooter, *Cybermorph*

Virtual Light Machine

When an audio CD is inserted into the Jaguar drive, the machine automatically switches to VLM mode, an on-board software routine written by *Tempest 2000* programmer Jeff Minter with Dr. Ian Bennett.

A standard CD player front-end is displayed while colored, music-sensitive patterns swirl, mutate, morph, and blend in the background.

The overall effect is similar to Panasonic's FZ-1 3DO music-playing routine, although the *VLM* enables the user to choose between nine different patterns and is more visually responsive.

CD-specific projects in the pipeline, but a number of its cartridge titles are due for the CD treatment. The most promising of these is the *Dungeon Master*-ish *Legions Of The Undead* (originally under the working title *Dungeon*). Based on a graphics engine best described as a cross between *Alien Vs. Predator* and *Doom*, it will feature "algorithmically animated textures" and offer the ability to look up and down.

However, probably the most exciting development for the Jaguar CD is the proposed conversion of *Defender 2000*, a project that came about when Jeff Minter approached Atari and suggested that he convert one of his all-time favorite games to the Jaguar. Like *Tempest 2000*, his previous tribute to a classic arcade title, it will incorporate both a straight emulation of the Williams original and an enhanced "plus" version. Fully colored backdrops (the original's consisted of simple vector graphics), a CD soundtrack, and AI-endowed multiples are all promised for the new game. Minter is currently putting the finishing touches to the core gameplay.



"It's looking more and more like this is gonna be on CD," enthuses a typically exuberant Minter. "I'd kinda like to do a historical section on there because we get so much room on the CD — an interview with Eugene Jarvis [the original programmer] maybe, and other historical data about *Defender*." ng

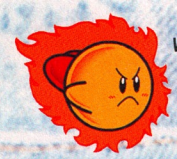
Jaguar CD games in development

Barkley: Shut Up and Jam! Accolade
Battlechess Interplay
Battlemorph: Cybermorph 2 Atari
B.I.O.S. Fear All Systems Go
Blue Lightning Atari
Braindead 13 Readysoft
Brett Hull Hockey Accolade
Chaos Agenda Atari
Creature Shock Virgin Interactive
Crime Patrol American Laser Games
Demolition Man Virgin Interactive
Dracula The Undead Atari
Dragon's Lair Readysoft
Dragon's Lair II Readysoft
Dreadnought Atari
Evidence Microids
Freelancer 2120 Imagitec
Highlander Atari
Horrorscope V-Reel Productions
Hosenose And Booger All Systems Go
Isle Of The Dead Rainmaker Software
Jack Nicklaus' Cyber Golf Accolade
Legions Of The Undead Rebellion Software
Little Divil Gremlin Interactive
Lobo Ocean
Primal Rage Time Warner Interactive
Mad Dog McCree American Laser Games
Mortal Kombat III Williams
The Outpost Atari
Return To Zork Activision
Robinson's Requiem Silmarils
Skyhammer Rebellion
Space Ace Readysoft
Soul Star Core Design
Space Pirates Atari
Starnet Virtual Xperience
Star Trek: NG MicroProse
Theme Park Bullfrog
The Realm Fighters High Voltage
Varuna's Forces Accent Media

Jaguar CD tech specs

Data transfer:	Double-speed drive — 352K/second sustained data rate
CD capacity:	790 megabytes (non-ISO 9660 custom Atari format)
CD management:	Custom "Butch" processor handles system chores and buffers data
Save RAM:	VLM saves last setting without expansion. Flash RAM cartridge (1 Mbit) for multiple saves to be available separately
Video standard:	VideoCD (only with optional MPEG cartridge)
Release Date:	June 1995
Price:	$149

Next one to call them "cute" gets a fireball in the butt.



What's that smell? Oh, it's your butt. Sizzling, **scorched** and smoking. You made the tragic mistake of thinking Kirby's new buds were harmless stuffed animals. Man, were you burned. This is **Kirby's Dream Land 2®** for Game Boy® and Super Game Boy®, and you're in the **hot seat.** Kirby's scraped under the desk of the animal kingdom and come up with a handful of down and dirty allies. They may look adorable, but they make Kirby **deadlier** than ever. Meet the owl that slings boomerang feathers. Shake fins with a fish that lets Kirby swallow under water. Kneel before the hamster that coughs up **white-hot** spheres of justice. "Cuddly"? Hardly. So hike up that asbestos underwear and watch your language.







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GAME BOY
KIRBY'S DREAM LAND 2
PLAY IT LOUD

AOU: coin-op houses unveil '95 line-up

Arcade companies show their wares at Japan's premier coin-op event

With *Virtua Fighter 2* fever slowly dissipating in the arcades of Japan, visitors to the Amusement Operators' Union (AOU) show in Tokyo were desperately looking for the next big thing.

And, perhaps predictably, it was another fighting game that drew the biggest crowds. Capcom's follow-up to last year's *Vampire Hunter — Vampire Hunters: Darkstalkers' Revenge* — was so popular that its stand was swamped from the moment the doors of the show were flung open. The sequel features two new characters and options to enable beginners an easier time but remains largely unchanged elsewhere. It seems that the classic *Street Fighter II* gameplay can still hold its own in Japan.



Capcom's other new titles were sequels. *Cyber Bot: Fullmetal Madness*, weighing in at around 300 Mbits, is the successor to 1994's *Powered Gear*, but its robotic fighters proved only a mild draw with showgoers. Surprisingly, the *Street Fighter* series also gained a new addition, called *Street Fighter Zero*. Its graphic style is now more akin to *Darkstalkers* than previous *SFII* incarnations, with new backdrops and several extra characters, including a Mahican-crested punk called Birdie.



Although the surface detail in *Air Combat 22* is gorgeous (above), most of the game is spent dogfighting high above the ground (top)

It was left to the likes of Sega to offer an original game, namely the next title in its *Virtua* series, the Model 2-based *Virtua Striker*, inspired by the 2002 World Cup which Japan is bidding to stage. Everything in the gameworld — including players, posts, and stadium — is made up of texture-mapped polygons, and multiple views can, of course, be selected. *Virtua Striker* offers a typically Japanese approach to the sport: it's fast, dynamic, and wonderfully over the top.



1995's Amusement Operators' Union show offered few real surprises to the thousands of delegates who swept through its vast main hall

However, the Japanese interest in soccer in general recently has waned, and Sega found itself receiving less attention than it deserved.

A finished version of *Sega Rally* finally made its public debut and had the desired effect on its audiences. Now with four cars and four levels (desert, mountain, forest, and lakeside), the game offers heightened roadside detail and a soundtrack sampled from real racing engines. While Sega expects the machine to perform well in Japan, it is more concerned with achieving a rapturous response in the West, where the theme is more established.

Rail Chase 2, the sequel to last



Japanese gamers lined up for hours to play Capcom's *Vampire Hunters* (right)







Sega's Model 2 technology is expanding into all areas, as *Virtua Striker* shows. Although the game played as well as other Japanese examples of the genre, AOU visitors gave it a lukewarm welcome



The high level of detail in *Virtua Soccer* extends even to the flesh on players' limbs







Two ST-V titles debuted at AOU, both one-on-one fighters: Sega's *Golden Axe: The Duel* (middle), and *Suigoben* from Data East (above)

year's big Japanese hit, was also on show. Its presentation is completely different to that of the original — scaled sprites and backgrounds give way to texture-mapped Model 2 visuals — and the gameplay has also been updated to enable the player more control. The game seems certain to achieve at least as much success as its predecessor.

Sega's final 3D offering was *Dennoo Senki Net Merc* (literally *Electric Brain War Machine*), which features a head-mounted display device (similar to those seen in Sega's VR-1 theme park attractions) and features a Model 1 board to generate its game environment. The simplistic shooting action plays well, but the display manifested poorly and the graphics failed to impress an audience hungry for texture-mapped polygons.

Polygons aplenty were to be found on Namco's stand, where *Air Combat System 22*, *Cyber Cycles*, and *Alpine Racer* were located. In the same manner that *Cybersled* received a texture-mapped paint job and became *Cyber Commando*, the latest *Air Combat* spotlights few actual gameplay improvements but boasts updated ground detail and enhanced aircraft details. And to show off the new graphic improvements, Namco has provided *Air Combat* with more of a close-combat feeling — so that you and your opponents often share the same airspace, and the result is a more exciting matchup.

PowerPC for Model 3?

The successor to Model 2 — the custom board behind *Daytona USA* and *Virtua Fighter 2* — is currently in development at Sega's Japanese hardware division. It's thought that Model 3 uses Motorola's PowerPC microprocessor in a parallel environment similar to Tao Systems' *Spyfish* arcade game (see NG 5).

However, don't expect to see it just yet. Sega's in-house commitment to Saturn development has hampered progress on the Model 3 board and all available resources are being directed at Saturn conversions of *Daytona USA*, *Virtua Fighter 2* and *Virtua Cop*.

Sega's coin-op factory won't be short of releases, though: it already has plans to unveil *Virtua Cop 2* at the JAMMA show in August, and *Virtua Fighter 3* is also at the planning stage for release in the latter half of 1996.

AM2 has another polygon fighter in development, based loosely on *Virtua Fighter* but with characters donning armor and wielding some heavy-duty weaponry.



Sega Rally's ground detail looks spartan in static shots, but you have to see the beast in motion to appreciate just how enticing the 3D environments are. An enhanced Model 2 delivers the goods



breaking





Japanese gamers, eagerly awaiting Namco's successor to *Ridge Racer*, found it in the multiplayer motorbiking game *Cyber Cycles* (left and above)





Namco's PCB titles, *Outfoxies* (top) and the *Track And Field*-inspired *Mach Breakers* (above)

Cyber Cycles is a futuristic bike-racing game which is similar to *Suzuka 8 Hours* to control — you sit astride a small bike and lean into corners. Its backgrounds are reminiscent of *Ridge Racer* (but with greater detail and a richer color palette) and various views are selectable, à la *Daytona USA*. The finished game will certainly garner a following among the growing ranks of driving-game freaks.

Namco further provided proof of its dedication to original cabinets with *Alpine Racer*, a skiing simulator for those with enough energy to manhandle its machine-mounted ski poles and "ski boot" mountings. Its slalom courses are presented in breathtaking 3D scenes but **NEXT Generation** found the game too limited for extensive play: The novelty of the control method means that *Alpine Racer* is not interactive enough to convey the actual thrills demanded by the concept.

All three of these titles were displayed in a standard System 22 format, although Namco is currently engaged in reprogramming them to make use of its newly developed board, Super System 22.

AOU wasn't all about giving new 3D games an airing, though. Namco also showed *Outfoxies*, a platform shooter with strong overtones of one of its earlier coin-op successes, *Rolling Thunder*. With titles like this, Namco is covering all bases and showing that the still-flourishing printed-circuit board (PCB) market is an important part of its business strategy.

Konami and Taito have, of course, always excelled in the PCB area, and their products presented at AOU reflected their continuing commitment to it. Konami's *Pop 'n' Twinbee* made yet another appearance in coin-op form but had very little new to offer. For its part, Taito showed *Elevator Action Returns* — yet one more sequel to an aged original — but succumbed to the temptation of 3D and gave center stage to *Amazia 3D*. While making use of technology developed last year, *Amazia* fails to attain Model 2 or System 22 standards but bodes well for Taito's future 3D work — which will presumably ditch sprites in favor of polygons. ng





Sega's Rail Chase 2 (top) uses a true 3D display. Taito's *Amazia 3D* shooter (above)



Namco's innovative *Alpine Racer* looks more like a piece of gym exercise equipment than a coin-op, but it works





Alpine Racer's polygon backdrops give the game incredible over-the-shoulder appeal. Sadly, the gameplay itself fails to quite live up to the System 22 exterior sheen

DigiPen: Nintendo goes to school

Where will the next Shigeru Miyamoto hail from? A Nintendo-sponsored game school in Vancouver may hold the answer

Back in **NG 2**, Shiny Entertainment's David Perry mused as to where the next generation of game creators would come from. Game design isn't taught in schools, and it's nearly impossible to pick up a console and simply innately demonstrate the necessary skills. Nintendo is hoping that it may have found an answer.

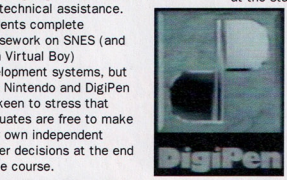
DigiPen is the brainchild of Claude Comair, who remains as chairman of the only school for "the art and science of 2D and 3D videogame programming" in North America. Nintendo is sponsoring the course, supplying DigiPen with both financial and technical assistance. Students complete coursework on SNES (and soon Virtual Boy) development systems, but both Nintendo and DigiPen are keen to stress that graduates are free to make their own independent career decisions at the end of the course.



Hands-on individual and team projects make up the majority of DigiPen's coursework and tuition

The aim of the course is for graduates to enter the development community fully equipped with the skills for a job in programming

The emphasis of the tuition is on the technological aspects of putting together a videogame. A high degree of emphasis is placed on mathematics (necessary for programming) and gaining a grounding in all aspects of game development from motion-capture to digitizing to basic logic problems. The aim of the course is for graduates to enter the development community fully equipped with the skills for a programming job.

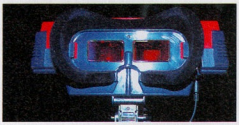


Competition for places at the DigiPen school, however, is fierce — there will be room for just 60 students at the start of next year's class. Though students come from all academic disciplines, the only strict course requirement is a minimum "B" average in 12th grade mathematics. Tuition fees approximate $6,000 per year, and the course lasts for six terms over two years. Our reporters visited DigiPen and were remarkably impressed by the dedication and commitment displayed by both staff and students. The course demands long hours, yet most students put in plenty of overtime working on individual projects.

NEXT Generation can (courtesy of Nintendo) exclusively offer one of its readers an exclusive, all-expenses-paid (accommodations, air-fare, incidental *karaoke* expenditures, etc.) chance to visit DigiPen in Vancouver, to personally present an application to join the 1995/96 class. Applications in this competition will be accepted on an equal footing with conventional applications, and so no place in the class is guaranteed — but you will have the edge of having presented your case personally. For full details, please write: DigiPen, **NEXT Generation** Applications, 5th Floor, 530 Hornby St., Vancouver, BC, Canada V6C 2E7. Requests for applications must be received by the end of June. ng



***DKC*: what DigiPen's students aspire to**



Students will work with Virtual Boy in '95

Summary of the Program

In DigiPen's own words, this is what graduates can expect to come away with after attending the two-year course:

In brief, the program is a condensed course in computer programming in general, and game programming in particular. It is suitable as a stepping stone toward other studies or as an end in itself. The program features a large amount of theory but is also kept very practical, containing science (computer science), and art (game writing, story boarding, computer generated imagery, and animation techniques) in the same program.

This condensed program offers excellent training in relatively short period of time, enabling students who are interested in joining the workforce as soon as possible to do so. DigiPen's aim is to provide top-quality education in the field of computer and videogame programming which will be locally and internationally recognized.

With the cooperation of Nintendo over the program and DigiPen's serious determination and experience in the field of computer graphics, we are sure to succeed in reaching this goal.

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Arcadia

News from an insider's view of the coin-op business, and how it affects the games you play



Marcus Webb is the editor-in-chief of *RePlay* magazine, the US' leading trade amusement magazine

by Marcus Webb

Battle of the Bikes

The world's leading manufacturers of video simulators will go head to head this summer in a contest of very elaborate motorcycle-themed games. In the one corner, we have Namco (makers of the original *Pac-Man*)... whose new *Cyber Cycles* game was previewed at the winter trade shows in Tokyo, Japan, and Reno, NV. In the opposing corner, we have Sega (makers of *Daytona USA*)... whose *Cool Riders* battled for the biker spotlight at the same Reno event.



Namco's entry into the coin-op cycle race is the impressive *Cyber Cycles*

Early buzz from arcade industry professionals seemingly gave to nod to *Cyber Cycles* even though programming was only 60% complete at the preview. This game is a two-player unit where players sit on colorful fiberglass replicas of motorcycle bodies, much like the firm's previous arcade hit with a cycle theme, *Suzuka 8 Hours*. Players will lean left and right on their seats, causing the onscreen cyclists to follow suit as they tear around banked turns and roar down the straightways; the throttle controls are built into the handlebars for the most realistic acceleration as possible. Riders will choose from three styles of onscreen cyclers and can tackle two courses, amateur and expert. The expert course will offer the challenge of nighttime racing through big-city streets.



***Cool Riders'* distinction from *Cyber Cycles* is its chopper-style bikes and numerous exotic locales**

Superb computer animation on *Cyber Cycles* features 3D polygon graphics with texture-mapped surfaces for realistic, photo-quality appearance. First-person and third-person viewpoints can be manipulated at the flick of a button. And units can be linked for interactive, competitive play for as many as four players.

But Sega's *Cool Riders* will definitely give Namco's game a run for its money. Like *Cyber Cycles*, the Sega piece is a two-player unit, but it's based around chopper-style bikes. The low-slung seats are stationary with rollbars overhead and short, high-mounted "hog" handlebars for steering control. Here again, texture-mapped polygon graphics offer ultra-realistic video animation. Gameplay offers a choice of eight different onscreen bikes (everything from offroaders to a "love machine" with sidecar)... and each bike comes with distinctive handlebar characteristics, plus eight different characters as the cyclists. According to internal documents we received from Sega, gameplay will include 48 stages of wild action in different exotic locales... starting with dodging rockslides through the Grand Canyon, where your bike is caught in a giant eagle!

Later this year, Taito — another leading-edge Japanese game factory — may place a third entry in the "battle of the bikes." At Japan's winter trade show, Taito showed a motorcycle simulator called *Dangerous Curves*. US execs weren't certain this game would be coming to our shores.

Mortal Mania

Williams/Bally-Midway unveiled *Mortal Kombat 3* at the Reno coin-op trade show. Gameplay offers a mix of new and old characters, digitized graphics, and even more realistic background renderings. Especially intriguing is a feature called "Choose Your Destiny" where players select a combination of cryptic symbols from a very large menu. The combination of symbols selected will have a mysterious, yet significant influence on the outcome of each martial arts encounter. This element is clearly reminiscent of the Tao Te Ching, The mystic Book of Changes, which Chinese philosophers have used for centuries to forecast people's futures. Out of a huge number of possible symbol combinations, some combos are more favorable than others. In fact, spelling out the best symbol combo may just be the secret to beating the game.

And that's where the fun comes in: Midway Manufacturing, the videogame coin-op subsidiary of Williams/Bally-Midway, will drop lots of hints about symbol combos in the game itself, in magazine ads, in the *Mortal Kombat* movie (premiering August 18), etc. By the way, lead game designer Ed Boon says the movie will combine story elements and characters from *Mortal Kombat 1* and *Mortal Kombat 2*. The coin-op, *MK3*, began arriving in arcades in late March. By mid-September, a new chip will be inserted in all coin-op *MK3*s adding a large number of new characters and extended depth of gameplay. Next, *MK3* should arrive on the home market sometime after mid-September (possibly as late as October, but we don't think so).

Videogame "Nostalgia for the **Future"**

Taito America is updating some old arcade hits this year; check your local arcade for *Elevator Action Returns* and *Space Invaders '95* — the latter being a comical version of the 1982 classic. (Targets include flying eggs.) Sega's going to be all over the arcades with its new racing game *Sega Rally*, as well as *Virtua Cop* and *Virtua Fighter 2* — all featuring 3D polygon graphics, and texture-mapped photo-realism for the driver. *Golden Axe: the Duel* from Sega should also hit arcades this summer. It's part of the company's new plan to coordinate arcade and home products more closely: the game is run on a new 32-bit platform which is the coin-op "sister" of Sega's forthcoming Saturn system.

JOYRIDING

Gaming on the information superhighway



Bernard Yee has contributed to *USA Today*, and contributes regularly *PC Gamer*, *PC Magazine*, and has authored several books on gaming

by Bernard Yee

Here, in your hands, is part two of the Joyriding column providing you with the specifics on where to go, what to do, and then some in cyberspace. As a continuation from last month's column, which focused on the noncommercial online locations, such as the World Wide Web, we continue here with commercial online services.

Commercial Online Services

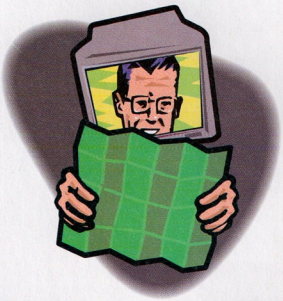
Online services are commercial in nature — they provide specific content and charge accordingly — and often also have some form of Internet access to boot. Services like America On-Line and CompuServe provide user friendly interfaces and lots of features, like newspaper stories, conferences and more, that are not on the Net or may be difficult to find. Most services provide limited Internet access — no major online service has a Web browser implemented as of the date of this writing, though most have it planned for the near future.

Commercial services are pricier but they also often have sophisticated multiplayer online games — more on them in a future column.

America On-Line has several places for gamers to meet. Try keyword "PC Games", and check out the message board. This board is heavily skewed to adventure games, but arcade/action fans can talk about their favorite games, from *X-Wing* to *X-COM*. This is a good place to find advice on game hints, though messages go way back (like 1992!), so you may spend some time going through the folders for messages. Of course, there's a separate folder for *Doom*.

Gamers fond of their Genesis, SNES, or 3DO should use the keyword "video games" — despite the ugly neon green font, this area holds lots of hints and game news; expect a much younger audience here than on the computer game areas — some of the info reads like it was written for 5 year olds. If you can wade through the bad grammar and English (some programmers should learn syntax in English before C++), this place is a good resource and has direct support from Accolade, Atlus, 3DO, and Crystal Dynamics. To sign up for America On-Line, call 1 (800) 827-3338 and you'll receive a copy of their front-end software (available for Windows and Macintosh).

CompuServe is one of the oldest online services and provides some of the best content of any commercial online service. I've found the Gamers+ Forum to be the best place online to find the latest opinions, game hints, advice (hardware and software) to any computer game fan, due to the helpful and knowledgeable folks that frequent Gamers+. They are like a friendly community, welcoming new users and frowning on testosterone-filled flame wars and you'll often be invited into discussion groups — especially if you're a woman. Try: GO GAMERS.



PC World magazine also has a separate game section you can reach by: GO GAMING.

The folks on CompuServe's Flight Simulation forum includes fighter jocks and other virtual pilots. Folks here discuss everything from *Red Baron* to *Wing Commander*, benchmark their systems and video cards, and have been known to engage in more than a few political debates. The FSFORUM hangar crowd seem to lean toward the right (no surprise since Modern Air Combat is one of the favorite boards), so don't come on here expecting people to agree with your gun control position. Try: GO FSFORUM.

Action games are so popular they have their own section on CompuServe. No surprise *Doom* and cartridge game fans here are younger, with a greater percentage of males, than other places. Try: GO ACTION.

Sega has a big forum here — lots of news, sales of Sega merchandise, information on the Sega Channel, all by typing: GO SEGA.

CompuServe has the best game support for computer games and videogames, with four Game Publishers forums and two Video Game Publishers forums. To get to Game Publishers' B Forum, try: GO GAMBPUB.

CompuServe also has CompuServe Information Manager, an excellent front end software for Windows (WinCIM), OS/2 (CIM for OS/2) and the Macintosh (MacCIM). Call 1 (800) 848-8990 to get CompuServe's front-end software.

GEnie has great members and many, many places with gamers, but, unfortunately, its Windows interface is primitive at best. Go to page 800 for the Games page. The gamers here are knowledgeable and serious, especially on Scorpia's RoundTable. Call 1 (800) 638-9636 to get GEnie's front end.

Drop me a line on CompuServe at 75300,3625, America On-Line at BernardY (BernardY@AOL.COM), and on GEnie at QuestBuster.

Back Issues

NEXT Generation is six issues old. Make sure your collection is complete, before copies sell out.

Missed an issue of NEXT Generation? Don't panic. A limited number of back issues are available exclusively through this offer. Here's the highlights of each issue so far:

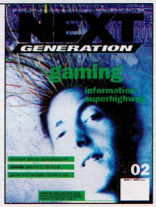


NG 1

talking — An interview with Trip Hawkins (President & CEO of The 3DO Company)
ng hardware — A comprehensive, in-depth look at all the next generation systems preparing for battle in 1995
ng special — The Violence Tapes. Four of the world's most controversial game developers in one virtual room

NG 2

talking — Shigeru Miyamoto (creator of *Mario*, *Donkey Kong*, *Zelda*, *Pilot Wings*)
ng hardware — Saturn: The complete story so far
ng special — Gaming on the information superhighway (aka "Joyriding")
ng special — Revival of the Fittest. Just why is retrogaming so popular?





NG 3

talking — Tom Kalinske (President & CEO of Sega of America)
ng hardware — Does PlayStation live up to the hype? A look at Sony's bid for world gaming domination. Including a four-page profile of *Ridge Racer*
ng special — What's wrong with the PC? (Part one). Can gaming on the PC survive?
ng special — Making tracks (aka "the noble art of game music")
ng software — *Virtua Fighter*. Saturn's fighting chance profiled

NG 4

talking — Nolan Bushnell (the inventor of *Pong*, and the founder of Atari)
ng special — Atari: from boom to bust, and back again. The complete history of the oldest videogame company in the world
ng special — An audience with Gumpei Yokoi, the inventor of Nintendo's Virtual Boy and GameBoy
ng special — What's wrong with the PC? (Part two). Where is the PC game scene heading?





NG 5

talking — Steve Race (Sony Computer Entertainment's President & CEO)
ng hardware — Ultra 64: the story so far. Nintendo will fight like a tiger to defend its own turf, and Ultra 64 is its main weapon. A 13-page exposé.
ng special — Apple: the ripe stuff. The story behind the latest company to develop a game machine.

NEXT Generation Back Issues

(US Only)

- Back issues **NG 2**, **NG 3**, **NG 4**, and **NG 5** are $4.99 + $1.50 delivery for each issue.
- Back issue **NG 1**, the Premiere Issue is $7.99 + $1.50 delivery.

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Generator

by Mark James Ramshaw



Probing the probable, inevitable, and theoretical of the industry's near future — this month a planet of sound

Just as the last five years have seen incredible leaps in home computer graphics, so the world of videogame sound is advancing. Now that sound cards in the new 32-bit machines are as advanced as fully-fledged sampler and synthesizer systems, it's time for the audio side to come of age. So just how is the industry getting into the groove?

Initially, a lack of risk-taking and the desire for a quick buck have manifested into cliched interactive music CDs. True, the likes of Peter Gabriel's seminal *Xplora 1* and EXP's purposefully nonuser-friendly Nine Inch Nails CD-i have brought new elements to a familiar format. But what of real experimentation? What, in short, about trying new things?

Virgin has taken the route of buying the aforementioned EXP, providing an instant inroad into music multimedia development; and there's the avant garde ambient/techno band Future Sound Of London, a band at work on its own jaw-dropping computer-generated videos; even Atari has wised up: the Jaguar CD system has, built-in, a bizarre but beautiful "light synthesizer" package called the *Virtual Light Machine*.

But can the user ever really interact with a musical product without detracting from the results? Can fiddling with interactive music CDs and Internet sound files ever really replace buying records and going to concerts? It's interesting to note Thomas Dolby is at the forefront of digital sound experimentation, but even his *Virtual String Quartet* program is just a neat-looking variant of the track remix angle. His focus now lies with a context-sensitive system, *Audio VR*.

With an investment of a $0.25 million in music facilities this year alone, Electronic Arts is at the forefront of game music and sound production. "There's nothing comparable to our new sound studio — it enables us to produce music of a quality you'd find in your local record store," says Chris Nicholls, head of audio for EA UK. "Most people have just been recording straight out of their synths until now. We're trying to raise the production values, so the result is comparable with that of the music industry. We're also spending a lot of time on sound effects development — it's really just as important as the music. We're trying to create a full audio experience — complete with 3D spatial sound."

And are there any interactive music products in the pipeline? Nicholls: "We're not convinced it can be done. Not yet, at least. We're looking to produce music similar in quality to cinematic scores. None of the systems for adapting the melody in realtime seem to work and the algorithms are too simple to make it musically satisfying. By using context-sensitive pieces, and bridging blocks of music, we're working on a system which will smoothly flow from one piece of music to the next in sync with the game. Really, the whole way of making music context sensitive is really just in its infancy."

Musicians like Queen's Brian May and former Ultravox man John Foxx have played a big part in the past, having written game soundtracks; Thomas Dolby's recent work on *Cyberia* could well pass for a commercial audio CD; and Depeche Mode man Martin Gore's work on PC title *Iron Angel* promises to add a more commercial angle to things.

So what next? Can videogame music ever really become totally integrated with the music industry? Whatever, it looks like the line is going to get more blurred before it gets clearer.

Mark Ramshaw is a former videogame producer, and currently works free-lance for numerous videogame, music, and lifestyle publications

Datebook

May

E3 (Electronic Entertainment Expo) May 11 to 13, 1995 Los Angeles, CA. This is one major show for gamers! Showcasing entertainment software, retail products, video, book catalogs, record, and other mediums. Call Knowledge Industry Publications at (914) 328-0649.

VR World '95 is a Mecklermedia event from May 23 to May 25 at the San Jose Convention Center in San Jose, CA. The general conference includes a general festival spotlighting conferences in networking, the Internet, and desktop; a video festival on May 23; session speakers from the tool makers to the market analysts. Call the Travel Desk for discounted hotel and air travel at (800) 944-9090, or the Hilton Hotel, the Hyatt Saint Claire, or the Fairmont Hotel for accommodations. To exhibit, call Marilyn Reed at (203) 226-6967, and to attend, phone Mecklermedia at (800) 632-5537 (Meckler).

June

The American Booksellers Association Convention happens from June 3 to 5, Saturday through Tuesday, 1995, in Chicago, IL, McCormick Place. The industry's own massive book, newspaper, magazine, and other publishers conference. Each year more technology infiltrates, including CD-ROM games on both the Mac and PC platforms. Call Reed Exhibition Co. at (203) 840-5614 for further details.

Digital World '95 Conference and Expo, Monday through Wednesday, June 5 to 7, 1995, at the LA Convention Center, Los Angeles, CA. This trade show and conference will highlight the convergence of digital technologies and aims at professionals in TV, film, the media, magazine publishers, printing companies, the digital media, internet users, etc. If you are into multimedia, then this is it. The two sections consist of the Expo highlighting new tools in traditional 'booth' style; the second is the conference consisting of four major panels. ZD Expos/Seybold Seminars. Registration: (800) 488-2883.

The 13th annual PC Expo will be held from June 20 to 22, 1995, at the Jacob K. Javits Convention Center, NY, NY. With the wide new possibilities in gaming on the PC and upcoming Windows games, the PC EXPO shouldn't be missed. Call the Brennam Group at (800) 829-3976 or (201) 346-1400.

August

SIGGRAPH '95 The conference, August 6 to 11, and the exhibition August 8 to 10, will be held in the Los Angeles Convention Center, LA, CA. Please call (312) 321-6830, fax (312) 321-6876.

PC Home Expo is Bruno Blenheim, Inc.'s emphasizes small offices, home offices, and home computing; the event will kick off on September 28 to September 1, 1995, at the Jacob K. Javits Convention Center, New York, NY. Call (800) 829-3976.

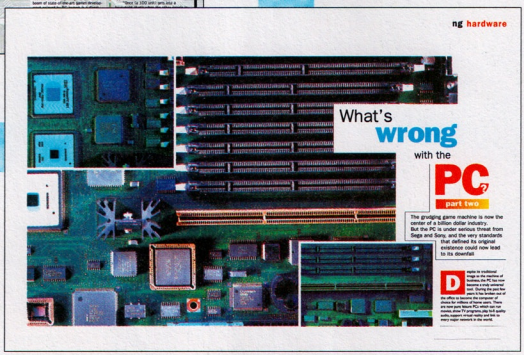
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3DO is making no secret of the fact that M2 is gunning for PlayStation. Matsushita (3DO's largest investor) is a long-time rival of Sony

M2

3DO

It runs rings around Saturn. It makes the Jaguar look like a pussycat. Sony's PlayStation? Merely kids' stuff

On paper, 3DO's next generation hardware is the most powerful game machine ever designed. NEXT Generation assesses its chances of causing the biggest gaming upset of the decade

The 3DO Company has revealed new technical specifications for M2, the second generation 3DO machine/add-on that CEO Trip Hawkins is counting on to wrestle back the initiative from Sony and Sega. With the Saturn and PlayStation now firmly established in Japan and preparing to launch in the US later this year, 3DO's planned launch of M2 has been seen as the company's one-shot chance to re-establish itself at the top of the next generation hill. The specs **NEXT Generation** has acquired indicate that M2 has, indeed, leapfrogged the PlayStation and Saturn and is now competing directly with the Ultra 64 on the "next next" level of hardware.

It has yet to be decided in what forms the M2 hardware will be introduced. What is certain is that an M2 "add-on" will be made available for existing 3DO players, enabling owners to make the upgrade. But whether or not it will be any less expensive than the inevitable stand-alone machine is open to question — and even the name is still being debated within 3DO Headquarters.

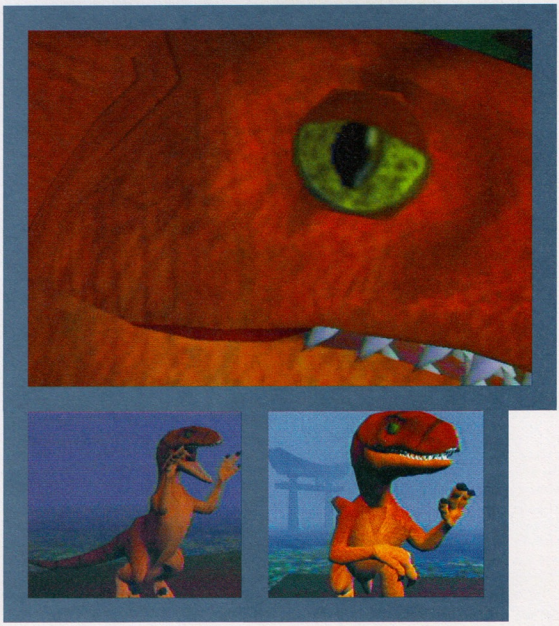
The M2 project first surfaced in **NG1**. Many people thought the performance projections were over-ambitious, but 3DO now states that its initial claim of 3D proficiency being five times greater than the PlayStation's was, if anything, conservative. According to the new data, the hardware shifts well over 1,000,000 plain, and more than 700,000, textured polygons per second, rendering the machine capable of between seven and 10 times the power of Sony's PlayStation (although the lack of a benchmark for polygon size and complexity means that these figures are open to interpretation).

According to the new data, 3DO now states that its new machine is capable of between 7 and 10 times the power of Sony's PlayStation

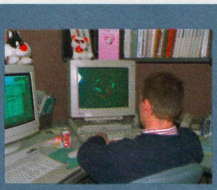
With M2, Hawkins and his 3DO development team have placed the emphasis on producing sizzling real-time graphics. The initial 3DO system was designed to compete on the playing field of 2D — at the time, *Street Fighter 2* and *Sonic The Hedgehog* dictated the pace for others to follow. This time around, 3DO's engineers concentrated on providing high-quality, high-speed 3D effects, including texture mapping, Gouraud shading, z-buffering and MIP mapping. These capabilities — which are far in excess of what today's machines can boast — are arguably even more revolutionary than M2's raw polygon count and give the system a real advantage over its competitors. Hawkins goes as far as to boast that M2 is more powerful than the Sega M2 *Virtua Fighter* arcade board.

The power to perform such visual gymnastics is provided by a RISC PowerPC 602 chip (a redesigned version of the 66MHz PowerPC 603 chip), calculating an exceptional 133 MFLOPS (millions of floating point operations per second), and a custom ASIC (application-specific integrated circuit), cohabiting on the motherboard. Designed specifically for 3DO's M2, the ASIC will handle the audio and video signals as well as the wealth of graphic effects. M2 also will have access to an incredible team of 10 coprocessors.

3DO played a key role in the development of the Power PC 602 CPU that was announced by IBM on February 13, 1995. Sharon Leah Grimshaw, 3DO's development products group manager, explains that "[the 602] is a derivative of the PowerPC 603 chip and is fine-tuned to maximize general processing and high-math calculations — and hence the potential for graphics. Some of the changes are designed to fine-tune throughput and unburden the CPU from things that aren't



There are no games up and running on 3DO's M2 hardware yet (though Studio 3DO titles are in development, and negotiations with third party developers are pending). So instead, 3DO has assembled graphic demos to illustrate M2's power: 1) MIP mapping ensures that the dinosaur's appearance won't corrupt when seen up close (top); 2) The alpha channel is used for "fogging" effects... (bottom left); 3) ...which includes the distance from viewed objects in its calculations (bottom right)



3DO's headquarters in Redwood City, California, has been the center of M2's development. 3DO's engineers have also been busy working on the original system and are now able to condense three of the original 3DO player's chips onto just one new "Anvil" chip. This has enabled 3DO's hardware partners to manufacture the standard 3DO player at a cheaper cost

M2 Tech Specs

• CPU
- Power PC 602 RISC @ 66 MHz
- 64 Kbits total (32K/32K) Instruction/Data caches
- 132 MFLOPS [Million of Floating Point Operations per Second]

• Memory
- 48 Mbits main memory (SDRAM, ROM)
- 64-bit Bus
- Cache-coherent memory system

• Graphics
- 640x480 and 320x240, 24-bit or 16-bit color
- MPEG1 built-in, supporting JPEG decompression

• Custom Graphics
- Texture mapping (destination-based rendering)
- Hardware texture decompression
- Filtering: linear, bilinear, trilinear, and point sampled
- Hardware MIP-mapping
- RGB and alpha channel Gouraud Shading
- 3D perspective correction
- Hardware z-buffer

• Audio
- 66 MHz DSP
- MPEG Audio Decompression
- 32 Channels

• Additional Features
- Backward-compatible with all existing 3DO software titles and hardware peripherals
- Game saving: Internal nonvolatile memory, storage cards
- Card slots for future peripherals



"All the specs are exactly what I'd expect of a decent designer. You don't get that feeling of technical bullshit about them"

necessary in the graphics arena; for example, the 603 was known for its double-precision, floating-point operations. That's great, but single precision, frankly, is more than adequate, and raises the bar in terms of the math calculations and the resulting onscreen graphics over systems such as the PlayStation, which are integer based."

To effectively exploit the potential of its silicon, 3DO has hiked M2's bus bandwidth (which governs the speed at which data moves around the machine and therefore affects the ultimate processing speed) from its original 400 MB/sec to a more substantial 528 MB/sec, making the machine perfectly suited to fast processing of large amounts of graphics data. This figure compares very favorably to the PlayStation's 132 MB/sec and even beats Nintendo's announced 500 MB/sec benchmark for its Ultra 64.

Add to this PCMCIA-style expansion slots, and new, built-in 2D routines designed to trounce the Saturn's sprite-handling capabilities, and the M2 hardware looks formidable. The only possible gripe concerns its "footprint" — the amount of data that the system routines and libraries take up in RAM. With a footprint of well over 400 K, M2 will need lots of RAM to avoid being snubbed by memory-hungry developers.

3DO plans a rigid, deliberate roll-out of M2 software. Currently in negotiation with four to five arcade partners, out of which we believe we will get two to three high-end arcade ported titles," says Grimshaw, 3DO plans for M2's launch to be accompanied by the big-name, high-profile titles its predecessor lacked. In addition to this first elite group (of which Capcom and Konami have to be considered members), it has been disclosed that between eight and 10 native M2 titles are in development with third party developers, with a further 25 software houses scheduled to receive M2 development systems over the summer.

Industry figures **NEXT Generation** spoke with were generally excited about M2's specs. "M2 is great technology," said one highly respected developer who preferred to remain anonymous. "All the specs are exactly what I'd expect of a decent designer. They don't have that feeling of technical bullshit about them that you sometimes get."

Electronic Arts' Randy Breen, the producer of the highly-acclaimed *Road Rash* on 3DO, is also impressed by what he's seen so far. "From what we've been able to tell, it looks extremely positive.

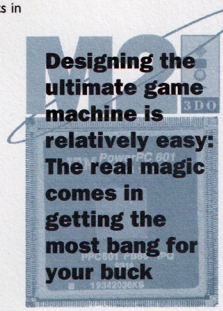
Performance wise, it could well be the most sophisticated machine out there."

But technology isn't always enough on its own. The success of a hardware platform ultimately rests in the hands of developers. No matter how good the technology is, the public loses interest if top titles fail to appear regularly — and the top titles are only developed if the machine can guarantee a sizeable audience. It's a vicious circle that 3DO is used to, but in terms of software potential, the first signs are good: the Studio 3DO demos seen on these pages are shifting characters composed of thousands of textured and shaded polygons in real-time. **NEXT Generation** was impressed as were members from the development community.

There is, however, still much skepticism about 3DO's chances, and M2's success is still far from guaranteed. The most obvious possible pitfall is the add-on's potential price.

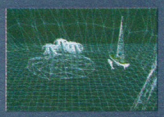
Designing the ultimate game machine is relatively easy: The real magic comes in getting the most bang for your buck — making a machine offering the most possible power at the lowest possible cost. "It just all comes down to price," Sega's President Tom Kalinske expounded in **NG 3**, and if M2 seems too good to be true, then that could be for a very good reason.

3DO maintains that the PowerPC technology offers extremely competitive power for price, arguing that, as part of a multicompany consortium involved in PowerPC's development, it can ride on the



Designing the ultimate game machine is relatively easy: The real magic comes in getting the most bang for your buck

A wire-frame model of a virtual world is created, and then texture maps are wrapped onto the shapes. Most of the techniques used to make the resulting image realistic are built in to M2's hardware, leaving programmers free to concentrate on the creative — and not the technical — elements of design





M2 Graphics Hardware Features

Much as Nintendo and Silicon Graphics are eager to stress the amount of graphical power-enhancing techniques included in the Ultra 64 chipset (see **NG 5**), 3DO is equally keen to point out that M2 is just as impressively equipped with graphics features not found on PlayStation or Saturn hardware. While its rivals have to perform many of the following functions in software (therefore placing extra burden on its processors), M2's hardware handles all these features on the fly.

• Destination-based texture-mapping:

Speeds up the process of fitting textures onto polygons of various shapes and sizes. M2's destination-based texture-mapping is designed to increase the onscreen resolution quality of highly-reduced textures.

• Run-length encoded compression and decompression

This saves valuable RAM space as textures are moved onto the screen buffer.

• Gouraud shading

Imagine a square with each corner a different color. Gouraud shading precisely merges the different colors into each other with no sudden changes, softening edges.

• Filtering

By the clever use of varying colors (usually requiring an increased color palette), filtering "smooths" pixilated objects, resulting in the eye perceiving a greater level of detail. The M2 system supports: point-samples, linear, bilinear, and trilinear filtering.

• MIP-mapping

To optimize performance, the M2 hardware switches between four levels of texture detail in realtime, maximizing detail when objects are viewed close up, and cutting unnecessary detail when objects are viewed from far away.

• Perspective-correction

Two-dimensional textures are accurately warped to fit 3D environments (complete with depth) in realtime. The textures currently seen in games such as *Doom* are accurately graphically incorrect, and wouldn't stand up to scrutiny at the level of graphical detail 3DO is proposing.

• Z-buffering

In a fast-moving 3D game such as *Ridge Racer*, every polygon has to be displayed on a single x-y plane (the screen). The impression of depth is conveyed by scaling polygons as they approach, and moving objects in front of one another (called "clipping"). Z-buffering (aka "depth buffering") uses a dedicated processor routine to provide perfect 3D clipping. Consoles such as the PlayStation have to circumvent ugly visual artifacts by subdividing polygons (which increases the number of calculations and theoretically makes the program run slower) clipped "manually" by software routines.

• Alpha channel

Predominantly used for transparency, "fogging" and other special effects, the alpha channel also fine-tunes and anti-aliases the edges of textures.

coattails of a larger, overall investment. But when it comes to a specific price, it's keen to point out that The 3DO Company doesn't set the prices for its hardware, instead "we deliver the lowest cost possible to Matsushita, GoldStar, and the other hardware partners," explains Grimshaw, "who, in turn, manufacture and sell the 3DO units themselves."

And what price do 3DO's hardware partners have in mind for M2? "I think it's safe to say that companies like Matsushita and GoldStar have learned that to earn market you don't launch at $700 or even $500," reveals Grimshaw. "They now understand that to make the market, to be successful, and to beat Sony — who they are after, at this point — they are going to have to come out at a price that is competitive. Where do we think that is today? Well, let's just say we doubled our installed base, in one quarter, at $399…"

So $400 would seem to be 3DO's magic number. But with Sony's PlayStation threatening to launch at less than $300, and Nintendo sticking to the "below $250" tag for Ultra 64, M2 could well find itself offering too much, and too soon; an echo of the original 3DO MultiPlayer's launch, which — in attempting to pre-empt the massmarket's move from 16-bit to 32-bit gaming — found itself lacking a prepared, ready-to-spend, sizeable audience of supporters.

Certainly Sony's Steve Race isn't admitting to losing any sleep over M2. "Remember that we're talking about specs," he argues. "And anyone can write down specs on a piece of paper. What's the price point going to be? How's it going to be distributed? You also have to look at the bigger 3DO picture. Even if you're going into suspended disbelief in a lot of areas, worldwide, Trip's probably sold less than 500,000 units — in well over a year. That's not a resounding success. He probably has installed in the United States somewhere between 80,000 and 150,000 pieces. That's not a lot of units and I think that as far as retailers are concerned, when you start to smell like three day old fish, you are three day old fish," he concludes (see **NG 5** for the full interview).

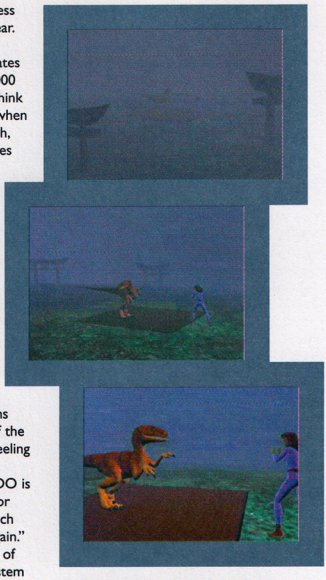
Ironically, it has been argued that 3DO's greatest achievement so far has been to pave the way for PlayStation and Saturn — and once again, history may repeat itself. One pundit observed: "the original 3DO carved the way for the new generation of machines and it solved everyone's development problems for CD-based and 32-bit machines. Unfortunately, when the more powerful machines came along, programmers had no trouble porting their skills to the new platforms and developing their skills there. All of the development community's heads are reeling with the technology that's already out there right now. The galling fact for 3DO is that M2 may act as a training ground for the Saturn 2 and the PlayStation 2, which will then go on to reap the rewards again."

A final problem is the perception of 3DO in the marketplace. Although system upgradeability is probably to be regarded as a "Good Thing," the thought of having to re-invest so soon will not be relished by existing 3DO owners (especially when you consider that — by 3DO's own admission — more than half of them will have owned their machines for less than 12 months). And will the game community embrace 3DO again? It's by no means guaranteed.

Of course, this kind of conjecture is most likely to be heard from people outside the 3DO camp, where morale remains bullish. Rumors that Matsushita was pulling out of the 3DO consortium have been firmly quashed by Hawkins, who told



This boat sailing around an island is one of 3DO's more impressive M2 demos. 3DO claims that this only illustrates one tenth of M2's polygon-pushing potential



The "camera" pans around a foggy hilltop (top), and strange, grayish shapes can be seen moving in the distance (middle). As we are brought in closer, a motion-captured female fighter is found sparring with a Velociraptor amongst Shinto structures (above). Very impressive indeed...

NEXT Generation: "I can tell you personally that Matsushita is helping us with some aspects of the engineering of M2. We are having weekly, and often daily, meetings with them to plan the manufacturing and introduction of their M2 product." 3DO is also known to be speaking with arcade firms about crossover technology, and "all of our existing hardware partners are supporting the M2 project," maintains Grimshaw.

M2's future will be put in more sharper context after the impending May E³ (Electronic Entertainment Exposition) in Los Angeles, where Nintendo, Sony, and Sega are all planning to show their next generation hands. Until that point, it would seem that Trip Hawkins has once again managed to evoke equal measures of admiration, astonishment, and skepticism from the gaming community.

And in many cases, all three. ng

M2 and the entire 3DO project is the brainchild of just one man. NEXT Generation first spoke with him in NG1, but for those of you that missed it, here's...

Trip Hawkins

NG: First, how do you answer the charges that 3DO's business model (in which hardware and software revenues are separate) will always render 3DO machines too expensive and uncompetitive?

Trip: First of all, a company like Sony has to pay for all its own R&D, whereas 3DO spends money itself, which is a tremendous cost-saving to each manufacturer who uses our technology. Second thing is, a 3DO manufacturer shares the majority of the marketing burden with all the other 3DO companies, so this overhead is not as high, and that's another thing that has to be factored into your cost. A company like Sony has to do all its own software evangelism, but we do that with the 3DO format. The other thing is that the major hardware 3DO partners own a big chunk of the 3DO company, so they are sharing in the royalty stream of 3DO, and second, they publish their own software. At the end of the day, there is really not that much difference.

NG: So tell us about the heart of M2.

Trip: M2 basically has two key chips in it. There is a PowerPC chip that was custom designed by IBM and Motorola to fit in our 3DO architecture perfectly. And then the other chip is the Custom ASIC which will do most of the other processing for graphics, audio and video.

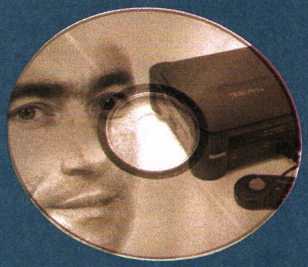
NG: Why PowerPC technology as such a key part of 3DO's future?

Trip: IBM has a proprietary semiconductor process and that allows it to manufacture up to five layers of metal on a single layer of silicon. And the more layers of metal connection you have, the more density — and hence performance — is possible. In the long run, the cost of the semiconductor has to do with the wafer size, not density. It's a proprietary process that, so far, has only been licensed to Intel and Motorola [and 3DO]. The best the competition can do is three-layer metal.

Also, both IBM and Motorola have the capability for multiple design teams and multiple processors in their family, so you have a lot of scalability when you need to move up to higher performance. There's really no limit then, they're always going to be staying ahead of you. Plus, since Apple and IBM are using the PowerPC, that will drive the cost down and so you're not just depending on 3DO hardware sales to reduce costs.

NG: How does this home-grown technology compare to what the competition is using?

Trip: First of all, in terms of CPUs, some competitors [Nintendo] are using the MIPS processor family. Well, MIPS has very few design teams and have never developed multiple processors at the same time. They don't have high volume customers and most of the MIPS production has gone into the workstation market — which is relatively small volume; it is a three layer metal process technology. Hitachi is also being used [by Sega] and there again, there are the same limitations. They are not a processor company on the same scale as an Intel, an IBM or a Motorola. Saturn uses the most powerful processor in the Hitachi family — it's a brand new part, it doesn't have volume customers yet, and because it's not a particularly high performance, they had to put two chips in. This creates a strange architecture that has segmented memory for all the different processors, and the coprocessors are from different companies, and so it's not very well integrated.



NG: How important is it that IBM is an American company, that it sits well with the rest of 3DO's design heritage?

Trip: If you look at what we're going to be able to do with our custom ASIC, we think that to design that kind of part directly, you pretty much have to be based in Silicon Valley. This is the place where videogames, the microprocessor, the personal computer, the graphic workstations, all of those things were invented. You've got literally thousands of people that have had entire careers in Silicon Valley who understand how to create consumer products like this.

NG: And this works to your advantage?

Trip: We're the only company in the industry that does all its research and development here. We've been able to draw from all those companies and all that experience and create the best team of designers to do this. And that is why the 3DO product is already in the market, it's way ahead of the competition, it's got much better performance. And, as we move in the M2 accelerator, we're going to take an even bigger quantum leap.

NG: So how does this advantage in chip manufacturing translate to better games than your competitors?

Trip: To give you one example, you can look at the die size of our custom chip and the die size of the custom ASIC of the Sony PlayStation and you'll see that they are about the same size, which means in the long run they are going to be about the same cost. Sony claims that its chip includes 1 million transistors, but our design has about 2.5 million transistors. Its chip runs at 33 megahertz, our chip runs at 66 megahertz. So, in effect, if you're looking at the processor, we're running twice as fast, and utilizing two and half times more transistors. So, it's roughly five times more processing power, and that's just in that one chip. Now, their chip includes their CPU, but then we've got this whole PowerPC, in addition to that. So there is a very direct difference.

NG: And how will this change gameplaying on the 3DO?

Trip: One consequence of that is improved polygon rendering. We thought that in the 1995 time frame most of the existing genres in software are basically 2D backgrounds, 2D foregrounds, or 3D background with a 2D foreground...

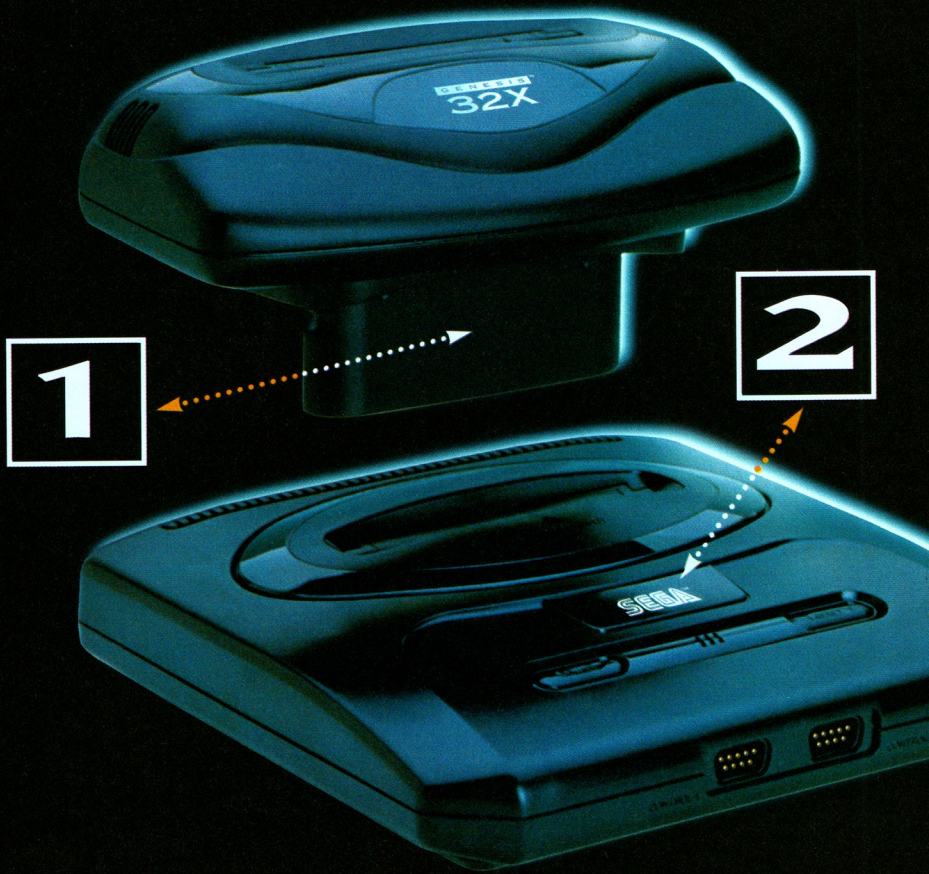
NG: Which is currently 3DO's strongest forte...

Trip: Right, so 3DO can do all the existing genres. But the one area that's like a new genre or a new paradigm is 3D background with a 3D foreground where you're trying to use 3D polygon rendering for the characters themselves [such as *Daytona USA* or *Virtua Fighter*], in which case you need tremendously high polygon performance to achieve that.

Now you look at something like *Virtua Fighter*, which is really, at this point, the only title of its kind. The fighters look like origami, and that machine is a pretty hot piece of hardware. That machine will do something like almost 200,000 polygons per second, but clearly that's not good enough. So we thought if we're going to enable new genres of software, if we're going to give software developers something that they'll have to spend the next five or 10 years to figure out how to really use effectively, we want to make a quantum leap that really delivers this power to generate more than a million polygons per second. And that's what we've done. In fact, it's substantially more than a million.

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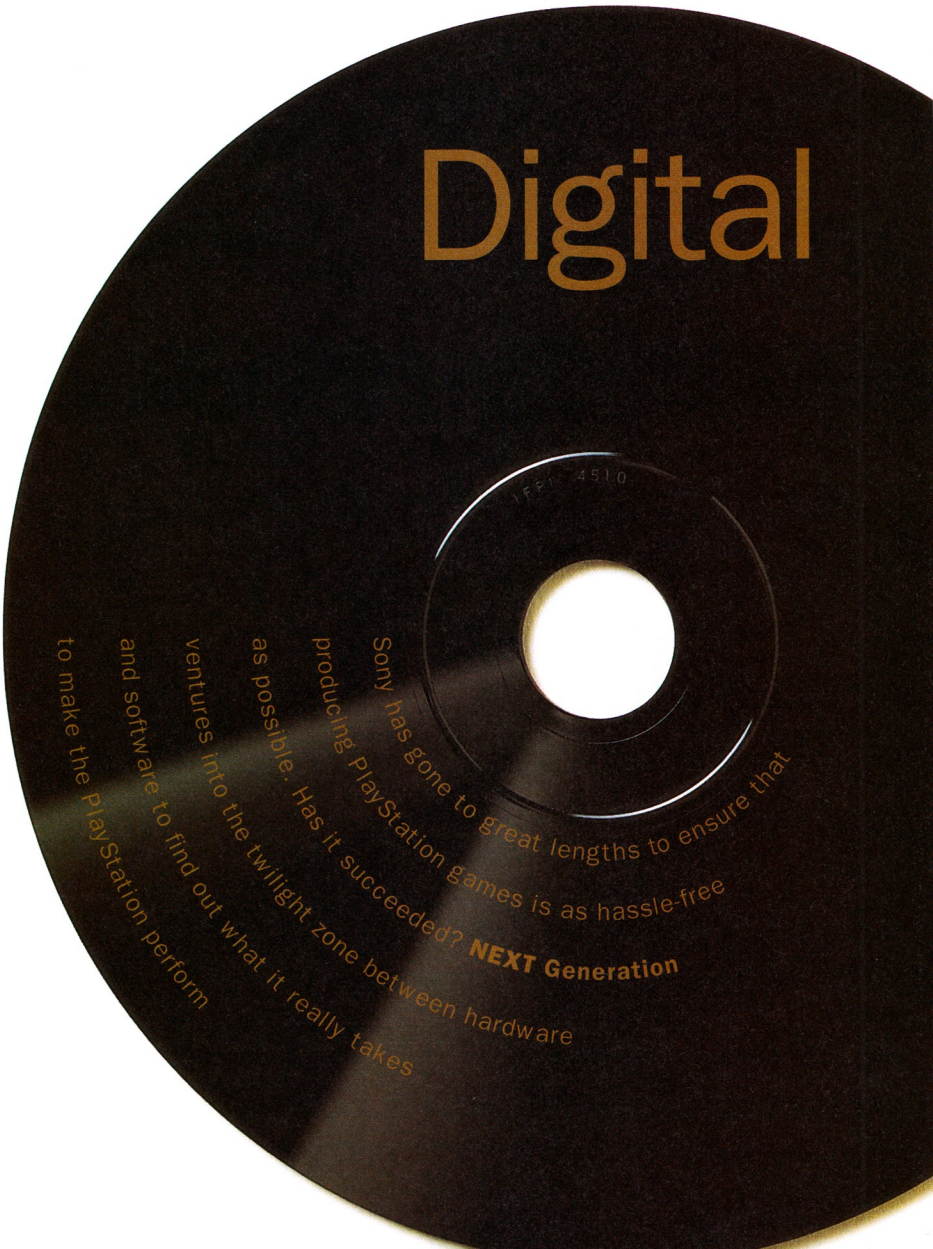
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Digital
Sony has gone to great lengths to ensure that producing PlayStation games is as hassle-free as possible. Has it succeeded? NEXT Generation ventures into the twilight zone between hardware and software to find out what it really takes to make the PlayStation perform

disciples

Sony's **PlayStation** game plan

Sony has good reason to feel pleased with itself. Having seemingly avoided the hurdles that have obstructed its competitors, it has arrived in the videogame industry with a clean slate and a healthy measure of respect. Now all the company needs is commitment, talent, and a few resources.

With a successful Japanese launch behind it, Sony is now preparing for the introduction of the PlayStation into the US and Europe. And while the Sony brand name will guarantee it some credibility in the department stores, its success will ultimately depend on having a wide range of outstanding software. As Sony's failed Betamax videotape standard proved, it simply isn't enough to have the best technology. For the PlayStation to be a success, it needs the cream of the world's development talent behind it. And that's exactly what Sony has been working on.



Phil Harrison is Sony Computer Entertainment's European PlayStation primary evangelist. Since September 1993, he has spent most of his time convincing developers throughout Europe and the United States of the merits of Sony's game platform. And it hasn't been wasted time: there are now more than 120 licensees in the United States with another 100 in Europe, and — most impressive of all — more than 250 in Japan. On top of all this, Sony has set up internal teams in the US, UK, as well as Japan to concentrate on developing its own range of titles which, according to Harrison, include "some extremely hot products." He points out that Sony's first internal efforts — launch underperformers such as *Motor Toon Grand Prix* and *Crime Crackers* — are "not indicative of the products that are coming down the line."

Although Sony claims a profound commitment to internal development, it has so far counted mainly on the expertise of a few Japanese third parties, and even allocated its internal resources to help external programming teams complete titles in time for the launch. *Ridge Racer* was a prime example: To enable Namco to understand the technology and get to grips with the preliminary libraries (many were still being written when work on the game began), Sony assisted the company with some intense technical support from Ken Kutaragi's R&D division — the team behind the development of the PlayStation hardware. According to Sony, the experience gleaned from those few hectic months is now available to all developers.

Sony's philosophy has been developer-driven from the beginning. When the PlayStation technology was being developed in Japan, the company was receptive to the opinions of the people who would be programming it, and this policy continued when the machine was touted around Europe as well.

"When we first came to the European developers a year before the launch, the spec was decided with the exception of the amount of RAM," says Harrison. "The bottom line was that they said they could make better games with an extra megabyte, and so we gave it to them. Since then, the decision has been more than vindicated by the quality of the product."

The size of Sony's developer base can largely be attributed to its efforts to make game production as streamlined as possible. As well as providing a wide range of programming libraries which are constantly updated and available online, Sony Computer Entertainment's HQs in California, London, and Tokyo house third party technical support teams together with producers and project managers who work closely with third parties. This approach is in stark contrast to the isolated approach of Sega and Nintendo, and is seen internally as one of the catalysts behind the development of first wave PlayStation games like *Ridge Racer* and *Toh Shin Den*.







Tamsoft, the Takara in-house team behind *Toh Shin Den* (left), has a sequel in the works for late '95. Takara's Toshiro Morioka (above right). The company's Aoto HQ (right)

Phil Harrison believes that Sony's emphasis on developer assistance will reduce the most time-consuming aspects of product development: "Historically, if you look at the development schedule — let's say 12 months — about 9 or 10 months is spent making the game work in terms of the technology. If it's a driving game, it's getting the driving bits up and running. If it's a shooter, it's getting all the sprites moving about the screen, and you add gameplay in the last two months. The difference with the PlayStation is that you can use the built-in 3D hardware easily, thereby diminishing that amorphous 10 months of, 'I'm working on it, honest, I've got lots of code written but you can't see anything yet.'"

"It's tempting to be completely committed to the PlayStation, but the PC is like a rock. When we got our PS-X development station it took us two weeks to port our PC code and only another two weeks to achieve a four-fold speed increase"

Peter Molyneux, Bullfrog Productions

While 3D is the uncharted territory that most developers are keen to explore, there remains a powerful 2D sprite engine inside the PlayStation that could get neglected. The first 2D PlayStation software attracted complaints from new adopters because of its visible sprite slowdown — although Sony attributes such mishaps to programming teething troubles. (For a glimpse of some experimental programming, check out Konami's second *Parodius* game, *Ultimate Parodius*, which uses PlayStation's hi-res mode and suffers badly in the speedier sections where the programmers haven't been able to double buffer the screen.) Encouragingly, though, most of the developers **NEXT Generation** spoke with said they planned to develop games for the machine's 2D potential in some form, and they were impressed with the tests they'd seen. "There are some games in development genuinely exploiting 2D in some interesting and innovative ways," claims Harrison.

One area of doubt, though, is the PlayStation's chosen storage medium. While its CD drive is fast and loading times are often insignificant, the danger exists that developers will abuse the format, as seen all too often on the PC. Early Japanese games like *Kileak The Blood* show the potential for prerendered MDEC video playback to enhance the gaming experience, but there are still too many companies out there more concerned with filling a CD than making a playable game.

"Personally, I don't like CDs," confesses Bullfrog's Peter Molyneux. "They make everyone approach game design in a similar way — it's often seen as a big pot to fill." But Sony admits that "you don't have to fill a CD to make a compelling game."

Virgin

Virgin has a healthy commitment to the PlayStation, with around 10 titles currently in the pipeline in the US and UK. These include *Hoopz* (a home-grown basketball game); *Tilt* (a pinball game from NMS), Papyrus' *IndyCar Racing* and *NASCAR Racing*, and, possibly best of all, a stunning new version of *Cool Spot*.

The game's programmer, Mark Kelly, comments: "The libraries are fairly strong and have a lot of work done for you, and the development environment and CD system work really well. Overall, good job Sony." Some of Virgin's PlayStation titles will be on show at E³ in May.



The PlayStation's so far little-used 2D abilities are exceptionally well handled in Virgin's forthcoming isometric platformer, *Cool Spot*. That particular game is being handled in-house in the US

Perhaps the most ingenious move on Sony's part was its decision to use the PC as a development platform, enabling it to call on the skills of a huge number of developers. Licensees now receive a pair of full-length ISA cards that plug into a normal PC. These two cards contain the entire PlayStation chipset, as well as extra RAM and some logic to enable them to talk to the PC. "It's great having the system inside the PC," reckons Peter Molyneux. "With most bulky console development systems it sometimes feels like you're fully surrounded by NASA control."

Such technology doesn't come cheap, though. PlayStation developers need to pay $18,000 in the US and (£12,000 in the UK) for the full system (which Sony is adamant it doesn't make money on), although all subsequent software tools and hardware upgrades are free.

But the decision to embrace the PC as a development platform has wider ramifications. Rather than promote a PlayStation-only development path, Sony has seen the advantage of capitalizing on the crossover of products between the two platforms. The vast majority of non-Japanese developers are focusing on both formats (in Japan the IBM-compatible PC has a small following).

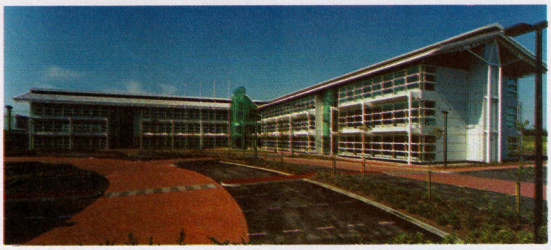
"It's very tempting to be completely committed to the PlayStation," admits Molyneux, "but the PC is like a rock. When we first got our PS-X development system, it took about two weeks to port our PC code over to it. However, it only took another two weeks to optimize that code, which brought about a four-fold speed increase on the PlayStation."

"We've yet to see how the restrictions on RAM, compared to the bucketloads you can have on a PC, reflect in the game. We'll have to be more clever in the way we organize RAM"

Ian Turnbull, Ocean Software

Of course, the PlayStation does have a few restrictions, and PC developers like Bullfrog are the ones most likely to cite them. Molyneux again: "With Bullfrog's games, our main game loop is often

Psygnosis: early adopters

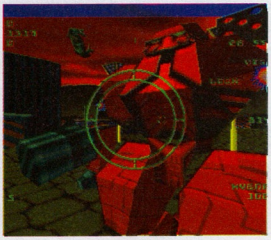


UK-based Psygnosis is one of the software developers with the most invested in making PlayStation a success. The UK headquarters will soon become home to some 300 full-time staff, increasing to 500 in the next six to nine months, to create the largest PlayStation development installation in Europe.

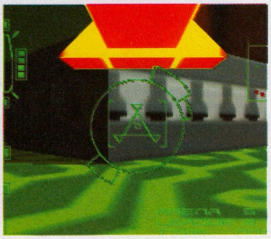
The Sony-owned company (its acquisition was one of Sony's first moves) has 10 titles planned for release between launch and January 1996, with an average of 12 team members per project.











Psygnosis' initial PlayStation line-up (clockwise from top right): *Wipeout*, a flying/racing game with head-to-head linkup facility; *Ideal* (working title), a mobile suit combat simulator; *Assault Rigs*, a futuristic sport game; *G-Police*, featuring an enormous realtime 3D city environment; and *Demolition Derby*, a stunning circuit driving game by former Amiga coders Reflections

burdened with nongraphics calculations, because we're often simulating realtime environments. In this case the main processor [a 33MHz MIPS R3000] isn't quite so bullish compared to a fast PC. The lack of RAM can come as a shock." This is also an area of concern for Ocean's Ian Turnbull: "We've yet to see how the restrictions on RAM, compared to the bucketloads you can have on the PC, reflect in the game. We'll have to be more clever in how we organize the main RAM area."

Phil Harrison plays down criticism of the PlayStation's lack of RAM: "A lot of developers from the PC community initially think that 3.5 megabytes isn't enough, but it's not actually a great problem. PCs don't use memory as efficiently as the PlayStation, so I think that it's unfair to look at the PC market for comparison."

However, RAM aside, there are differences between the PlayStation and the PC that will make the transfer of some titles difficult. While the PlayStation is not a true multitasking machine, it has some degree of multithreading (the hardware does things by itself in the background). The PC is inherently a single-tasking machine, so taking a complicated PlayStation game that uses CD-streamed backgrounds, video decompression, and sprites, and converting it to the PC might prove a tricky job.

The use of the programming language C is instrumental in developing across both the PC and PlayStation. To speed up the development of traditionally time-consuming code, Sony has used C which enables the company to distribute libraries for PlayStation programmers. Sony has also adopted the language as a means of safeguarding the future compatibility of its machine should it decide to tweak or optimize the hardware, any game that has been extensively hard-coded could be rejected by Sony. By using library routines to handle all hardware access, all Sony has to do when new hardware comes out is recode the routines to ensure compatibility. (Sony uses the excellent freeware compiler GNU C, which, because the PlayStation is based on the widely used MIPS processor, is familiar to hundreds of thousands of programmers around the world.)

EA

Electronic Arts has so far been very wary of pinning its colors too firmly to any one mast in the next generation race. But it would be foolish to underestimate the influence of the world's largest third party game developer — and both PlayStation and Saturn games are in the works.

As well as 32-bit versions of old favorites (*Madden*, *Road Rash*, *FIFA Soccer*, etc.) EA's affiliates can be relied upon to keep the flow of next generation titles coming.

More concrete news can be expected at E³. So stay tuned...



Delphine's *Crossfire* (see page 58) is being converted for PlayStation, and it's likely (but not yet confirmed) that Electronic Arts will be publishing the 32-bit title in the US



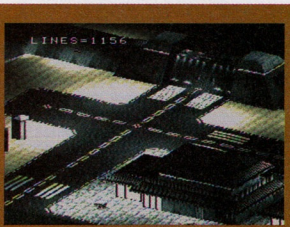




Namco has 20 Sony titles in the works under the direction of Shigeru Yokohama (center). New title, *Ace Combat* (far left)

Bullfrog

Bullfrog now has four PlayStation games in the works, including *Theme Park* (using the PlayStation memory cards), a "blindingly fast" *Magic Carpet*, and an original title, *Syndicate Wars*. Boss Peter Molyneux isn't coy about his admiration for the PlayStation: "For a console, it's really, really brilliant. Compared to working on the 16-bit machines, it's like being released from jail in terms of the freedom you have. On the other hand, I do hope that Sony doesn't adopt the traditional console approach where everything has to get approval. That's why there's so little originality on the consoles."



***Syndicate Wars* (above) uses a new graphic engine and an immersive 3D perspective. According to Peter Molyneux, Bullfrog's conversion of *Magic Carpet* will be "amazing"**

Of course, many assembly nuts will throw up their arms in disgust, but coding solely in assembly on a machine like the PlayStation leads to ludicrous development and debugging times. Harrison has the last word: "I'm not suggesting that our approach will shrink development times dramatically, but I do expect that the technology side of the game will get fixed much earlier in the schedule, and the rest can be spent making great games." ng

The development system

The PlayStation may have been conceived and developed almost exclusively in Sony's Tokyo R&D labs, but its software development system has its roots embedded in European soil. UK-based company SN Systems is a six-man company which was given the honorable task of designing a development system for Sony's new games console. Its PC-based development tools are now standard Sony issue and are used by PlayStation developers all over the world.

Co-owners Andy Beveridge and Martin Day have a rich experience in game design. They used to form an Amiga and ST coding team called The Assembly Line, and before that Andy worked at Realtime Games in Leeds, UK (ironically, Realtime is now a Sega-owned company called Cross Products which also makes development systems), while Martin was programming the eminent 16-bit blaster *Xenon 2* for the coding firm The Bitmap Brothers. The duo came together to form The Assembly Line in 1988 but it wasn't until 1990 that SN Systems was formed. Since then, the company has supplied development system software and hardware for various machines, including the ST, Amiga, Genesis, and SNES.

Sony entered the scene in late 1993. At that time, SN Systems was publishing its development software through Psygnosis under the PSY-Q name and also supplying the company with all its internal system requirements. When Psygnosis was acquired by Sony, the company was lucky enough to get early access to the first PS-X hardware shipped into the UK. And it wasn't long before SN Systems took delivery of one of the very first boxes. "Just before Christmas we were given one of the MW.2 boxes by Psygnosis," recalls Andy. "They told us they were developing for this secret new console. We couldn't talk to anyone about it, but they needed our help."

In Japan, Sony had been preparing to use its own Sony News workstations for PS-X development — these were expensive MIPS R4000-based machines that could be connected to the prototype PS-X box. But the thought of using expensive Japanese workstations was abhorrent to a PC-friendly developer like Psygnosis, so SN Systems were given the chance to create something around the PC.

"We worked right through Christmas and New Year's," remembers Andy, "and then, at the Winter CES in Las Vegas in early '94, Psygnosis arranged an audience for us with the Japanese. Andy and Martin showed off both the GNU C compiler and the source-level debugger running on a PC through Sony's MW.2 box."

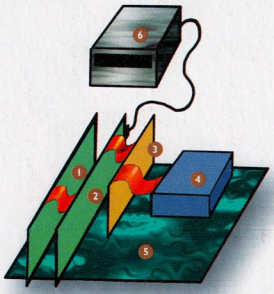


Andy Beveridge (left) and Martin Day have taken SN Systems into the fast lane

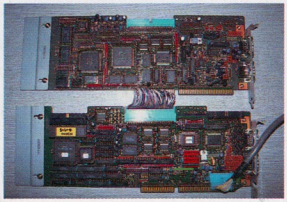
Fortunately, Sony liked what it saw. A few weeks later, SN Systems received notification that Sony in Japan had decided to abandon its plans for an exclusively workstation-based development system and had opted for SN Systems' PC approach instead. An order for 350 systems immediately followed, and the company supplied Sony with software that included an assembler, a linker (which allows fragments of code to be linked together), and a debugger. Another order for 300 systems followed shortly afterward.

In late spring 1994, Sony's development hardware progressed to the MW.3 target box, which contained final silicon — although some boxes lacked sound hardware (or libraries to make use of it), and there was still no CD drive in sight. But Sony's next move consolidated its commitment to the PC as a base platform: the PlayStation hardware was condensed by SCE Japan onto two cards that would fit inside a standard PC. The Japanese flew Andy and Martin out to Tokyo in June to let them work on the new setup and write new software, so that the bulk of the existing system worked with the new hardware. Apart from extra RAM (eight megabytes of DRAM as opposed to two megabytes in the production PlayStation) and some PC logic, the hardware that slotted into the PC was virtually the same as the production PlayStation.

The PlayStation development system was now almost complete bar one vital







The PlayStation development system fits inside a PC (above left) and contains (top left): 1) an ISA card containing the PlayStation CPU, GPU, VRAM, and DRAM, RGB, with Composite video out and a nine-pin comms link socket (above right, top card); 2) another ISA card with the CD I/O, PC interface, kernel boot ROM, and joypad sockets (lower card); 3) a CD emulator card by SN Systems; 4) hard drive; 5) PC motherboard; 6) PlayStation-spec CD-ROM drive

component: the CD-ROM drive. While the twin PC cards had already been shipped out to developers, the CD drive was still in development in Japan. In October, three months later than planned, SN Systems finally received a production-spec CD unit (it was brought over personally by an SCE manager because Namco was waiting on it to complete *Ridge Racer*). This enabled the company to design a CD emulator card which connected to a hard drive and output a steady data stream equivalent to that from the CD drive. Now PlayStation code could be written and tested under simulation without having to repeatedly cut expensive gold CDs (requiring a specialist Sony machine costing $6,600).

For testing from CD, a gold disc can be run on the PlayStation-spec CD-ROM drive (now included in the full development kit). In theory, if that disc works in the development kit, it will work in the production PlayStation (it's possible to play *Ridge Racer* through the development system, for example). However, the few differences between the development kit and a production PlayStation mean that final testing is done on a blue debugging PlayStation — this is the closest it gets to running on a production console before the complete game is submitted to Sony for duplication. The blue machine (only supplied to NDA-signed developers and the Japanese game press) reads both encrypted (black) and unencrypted CDs.

Now that its tools are in use throughout the entire PlayStation development community, SN Systems has had to become used to fielding a constant stream of queries from developers around the world. Andy claims that they manage to turn most problems around in a few hours, though. "Having e-mail has been a lifeline in this business," he declares. With a Saturn development kit now complete, the company is looking to capitalize on its skills and is channeling its efforts into porting its tools to other platforms — including nongames machines.

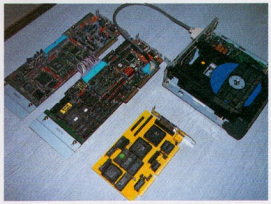
SN Systems can be contacted in the UK at: 011 44 117 929 9733.





An example of MDEC at its most impressive can be found on SCE's Runtime Library CD







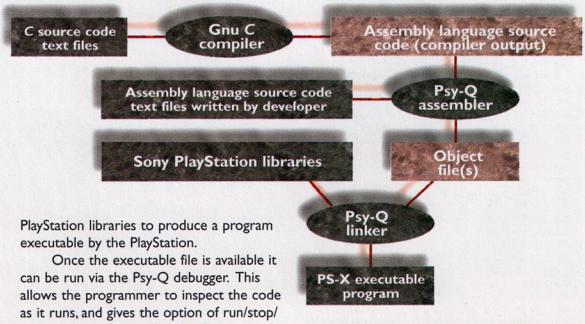
Sony's development hardware began with a series of large target boxes (MW.3, top) and progressed to the twin ISA card system (center) now in use. Final debugging is done on Sony's blue PlayStations (above)

Psy-Q-logical: PlayStation authoring made easy

The Psy-Q development system produced by SN Systems mimics the operation of a commercially available PlayStation to allow efficient authoring of titles for the platform.

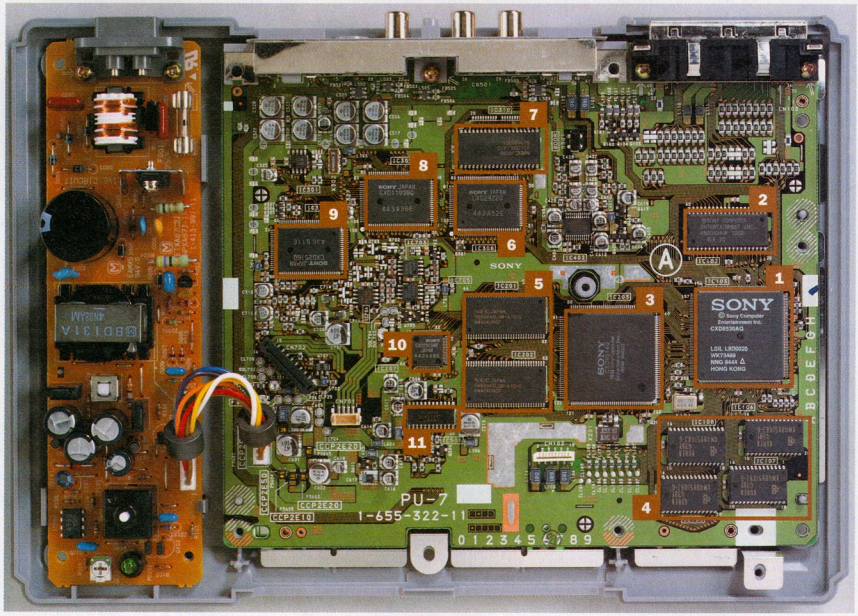
The primary function of Psy-Q is to enable programmers to switch easily between C (relatively easy to write and debug) and assembly language (faster and more efficient), and to merge disparate parts of the program into a coherent whole. Written by the programmer, C source code is compiled as assembly source code and then passed onto the Psy-Q assembler. The assembler also receives assembly code written manually by the programmer to eliminate specific bottlenecks in the program and merges the two together. The result is then passed onto the Psy-Q linker, which links the embryonic program with standard PlayStation libraries to produce a program executable by the PlayStation.

Once the executable file is available it can be run via the Psy-Q debugger. This allows the programmer to inspect the code as it runs, and gives the option of run/stop/stepping it and inspecting the C or assembler at any point. Crashes can be analyzed and more efficient code devised.



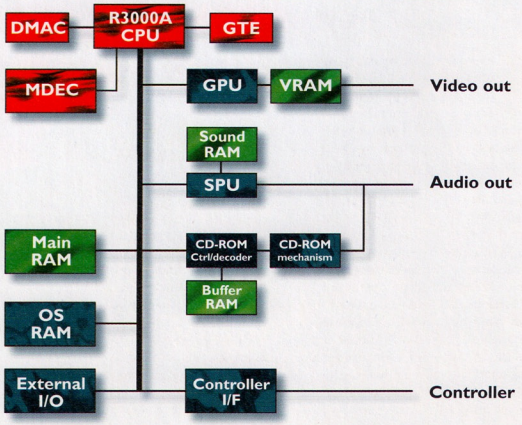
Some of the nuts and bolts of producing a PlayStation program are hidden from the developer by the tools. This diagram shows the main stages in the programming process

Inside the PlayStation



The PlayStation's VLSI (Very Large Scale Integration) architecture can be seen on the diagram (right). The actual circuit board (above) contains the following chips:

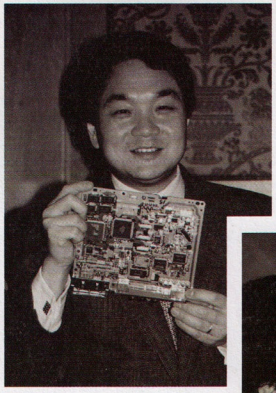
1) The CPU (a 33 MHz R3000 @ 30 MIPS) also contains the 66 MIPS Geometry Transfer Engine (GTE), the DMA controller, and Sony's 80MIPS proprietary MDEC video decompression hardware. MDEC gives full-screen high-quality video playback, and can also decompress graphics into VRAM
3) The GPU (Graphics Processing Unit) — handles everything that's drawn onscreen
2) Operating system ROM — initiates the boot-up sequence on switching on
4) 2 MB DRAM (main RAM)
5 1 MB VRAM (video RAM)
6) 16-bit sound processing unit delivering 24 channels of ADPCM @ 44.1 KHz
7) 512 K sound RAM
8) CD controller — contains a CD ROM-XA converter (allowing up to eight simultaneous streams of mixed audio and CD data) and a small amount of buffer RAM
9) Digital signal processor for CD drive
10) 16-bit video digital audio converter
11) Video decoder and encoder — NTSC or PAL signal decoder that sends signal to TV





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An interview with Ken Kutaragi

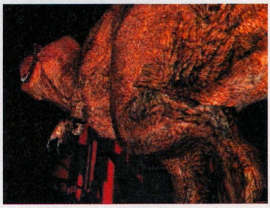




Ken Kutaragi is the hardware mastermind behind the PlayStation. The 44-year-old director and general manager of SCE's R&D division in Japan has been with Sony for 20 years. **NEXT Generation** chatted with Kutaragi-san at Sony's recent PlayStation Technical Workshop for developers.

NG: Which aspect of the PlayStation was it most important to get right?
KK: The objective was a high-performance, low-price videogames system which also had a design which was easy to write games for. We wanted to get many software companies creating games, and so we had to design a very small and very sophisticated operating system and develop software libraries to help programmers. This enabled programmers to create games quickly and easily and also allowed them to write high-quality games in a short period. Those three things were the most difficult things to get right.
NG: Perhaps the PlayStation's most distinctive feature is its joypad. Why was it designed like this?
KK: The gameworld is 3D so it needs the deep directional control buttons [the shoulder buttons]. So we added buttons for the index and middle fingers and then realized that it was unstable, so we put a grip on the lower part. We simulated every situation that the joypad could be used in. We imagined what it would be like to have to continually put the pad down when mapping a game, play while lying on the floor and many other cases. After that we had to decide on the weight of the buttons and the pad itself. We adjusted the weights one gram at a time and eventually found the correct balance. We probably spent as much time on the joypad's development as the body of the machine. Sony's boss showed special interest in achieving the final version so it has his seal of approval.
NG: Do you think programmers will achieve effects with the hardware that you thought were just not possible?
KK: We continue to have software engineers write new libraries to exploit the hardware in new and exciting ways. So the answer is yes, and who knows where hardware of such sophistication will go? But we are developing new and innovative libraries which will push the hardware even more than you have seen to date.
NG: Which game have you been most impressed with so far?
KK: *Toh Shin Den.* Takara had to get used to a new platform but they still created a game with very good graphics.
NG: What kind of game would you most like to see running on the PlayStation?
KK: A game which has the synthesis in 3D graphics of a character with a personality. Where you had a 3D realtime generated personality whom you can interact with in a personal way. That's combining the processing power of the PlayStation with high-end computer graphics to generate realistic faces and personalities.
NG: How closely does the finished PlayStation resemble your early plans?
KK: 100%. The original idea was to make a synthesizer for graphics. Something that takes a basic graphic and then adds various effects to it quickly and easily. I wanted to develop a machine capable of displaying subtle effects without difficulty. We achieved that. I have a long list of additional things which could be used in future generations of the hardware, but in order to meet the low cost, many elements had to be left out of the current machine.
NG: What additional features would you like to see in PlayStation 2?
KK: Two things. One is higher performance in computer graphics, which benefit from faster and more compact integration of silicon. Within 10 years we will see vivid computer graphics on a TV screen which are generated by 0.25-micron silicon. This enables us to have CG rendering power of 10 million polygons a second. That is equivalent to a movie-quality image. But the most important thing is that during the next few years there will be widespread use of high-bandwidth communications, which would be a feature of future versions of PlayStation technology. Though clearly, as a videogames machine, it's important to have even more spectacular effects.
NG: How frantic did everything get toward the end of the project?
KK: At the peak we stayed up all night for several nights in a row. We couldn't stop working because our work was so interesting. The only problem was that our office in Akasaka didn't have a bath in it. One of our employees didn't wash for more than two weeks!





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The latest news on the future of videogaming

Once again we've talked to developers from around the world to bring you the first look at games currently in production. For reviews of new titles, check out our finals section on page 100.

58 Crossfire PC & PLAYSTATION
French developers use a modeled 3D world to create a truly interactive movie

66 Killing Time 3DO
Developed in-house, 3DO gets another welcome taste of 3D *Doom*-style action

68 Virtual Pool MAC & PC
Real world physics and slick visuals bring realistic pool into the home

70 Minnesota Fats SATURN
Data East brings its successful pool engine to the Saturn for smoking high-tech action

72 Daedalus SATURN
A new space adventure with prerendered graphics and first-person bloodshed

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Delayed by internal troubles, Activision's ambitious sim breathes life anew

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Studio 3DO takes to the skies in a 3D, helicopter-inspired action title

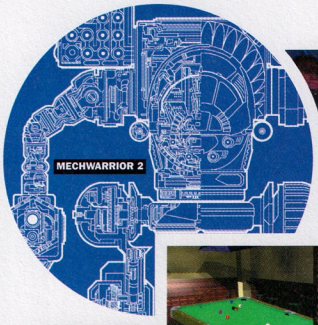
81 Virtual Hydlide SATURN
After a 10-year rest, *Hydlide* returns in a blaze of texture-mapped glory

82 Heart Of Darkness PC
Amazing Studio's PC powerhouse takes the 2D graphic action/adventure to a new level

92 Extreme Power PLAYSTATION
Having started off so strongly, Sony's PlayStation software line-up needs a hit

94 PO'ed 3DO
Congratulations goes to the winner of June's strangest name-of-the-month contest

96 Astal SATURN
Cartoon-style graphics and backgrounds back up an old-school platform game



























Crossfire

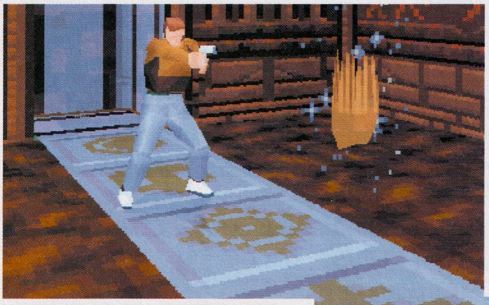
You want an interactive movie? You've got it. Forget full-motion video, a realtime 3D environment is the way to go. **NEXT Generation** takes a world exclusive glimpse at what could easily become the next Big Thing

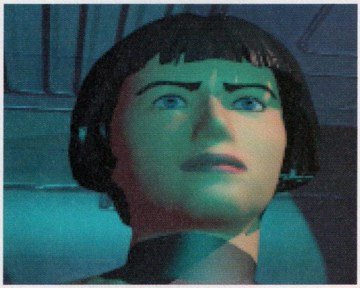
In 1993, a game called *Flashback* redefined what was thought graphically possible on a 16-bit system. The fluid movement of the game's hero — Conrad — was leaps, bounds, and swash-buckling somersaults ahead of what Jordan Mechner had achieved with the *Prince of Persia* in 1991, and thus the game thrust Paris-based Delphine into the lime-light of international recognition.



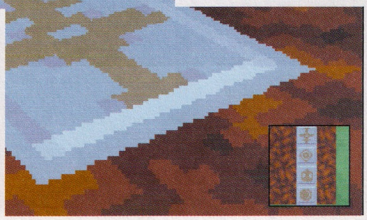
Now, Delphine is set to do it again. *Crossfire* is *Flashback* for the 3D, 32-bit age, and the game characterizes the advances made in graphics, game structure, and production values embraced by the gaming industry in the past two years. *Crossfire* is the first of a new crop of interactive movies — a crop

Format:	**PC CD-ROM & PlayStation**
Publisher:	**EA**
Developer:	**Delphine**
Release Date:	**September**
Origin:	**France**



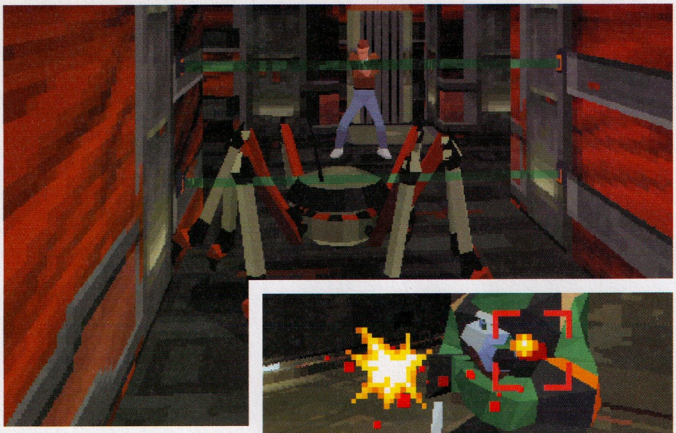


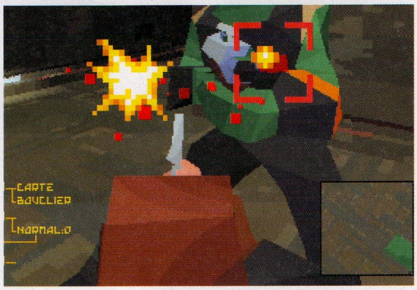




During the game, all graphics and backgrounds are rendered on the fly, enabling free movement (left, top left). Cinematic cut scenes (above, far left) usher in and out each action level. Sarah (above) is the game's heroine and Conrad's love interest (as well as our cover girl)

With a might equal in effect to eight bottles of Zima, the Morphs hold mankind — and our hero, Conrad — in their evil grasp





To facilitate more accurate gun shooting, the game "camera" snaps into a down-the-barrel view that *Doom* players will feel immediately at home with (above). Delphine is currently in the middle of bug testing and gameplay tuning to ensure that the problems, puzzles, and robot spiders (top) strike the right balance between challenge and ease of play for beginners

Credits

Story & Director
Paul Cuisset

Project Manager
Phillipe Chastel

Art Director
Thierry Perrau

Story Board
Éric Caron

Music & Sound Effects
Raphaël Gesqua

Main Team
Alain Ramond
Alain Tinarrage
Béatrice Laurent
Benoit Verllaud
Cécile Thomas
Claude Levastre
Florian Guzec
Frédéric Loubiere
Grégory Béal
Guillaume Genty
Hervé Gaerthner
Jérôme France
Paul Tumelaire
Sébastien Clément
Serge Fiedos
Stéphane Aussel
Thierry Bansfront
Thierry Levastre
Yann Le Gall

Additional Team
Patrick Bricout
Arnaud Carré
Fabrice Rodet

of games that will continue to flourish and grow long after the FMV-based, pseudo-interactive titles wither and die.

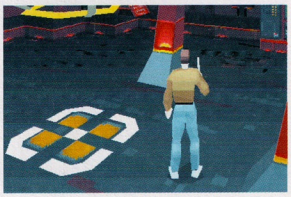
Crossfire offers sumptuous cinematics, breath-taking scenery, and a thrill-a-minute story line in a realtime 3D world in which you are free to explore at your own pace. Unlike in Origin's (albeit commendable) *BioForge*, the scenery in *Crossfire* is rendered on the fly. The resulting feeling of movement shares the gritty realism of *Doom* with the cinematic panache of *Virtua Fighter* — and enables you to explore at your own pace, and in your own style.

Second, Conrad's

movements are the result of painstaking motion capture, as opposed to simply "rotoscoping" (direct transfer of videotaped movement to animation frames), which grants Delphine's programmers the freedom to place their game hero in any situation, viewed from any angle, and have him behave in a lifelike manner. Whereas character animation based on video footage can only ever be an exact replay of the original videotape (as in *Flashback*, or *Mortal Kombat*), Conrad's range of polygon-based movements is unlimited. It's the difference between properly learning a language, or merely repeating words parrot-fashion— one that could revolutionize the way we play games.

The year is 2190 AD. The solar system is in the clutches of an alien race, one which is not quite in control of itself. Morphs — creatures with all surface, no substance — are able to replicate any shape at will. Controlled by auxiliary master brains, this breed of impostors has systematically reduced mankind to "a whimpering quagmire of indecision and paralysis." So, with a might equal in effect to eight bottles of Zima, the Morphs hold mankind — and our hero, Conrad — in their evil grasp.

Conrad starts his adventure in a prison cell. As the game unfolds, so the story of Conrad's one-man revolt against the Morphs is told. Prerendered animated cut scenes usher in each of the six levels, giving hints as to what has to be achieved in order to complete the next level. For example, in stage two, Conrad will only earn promotion to level three once a rigid set of objectives have been fully completed. He



Once any immediate danger (requiring a fast trigger) has passed, the game "camera" pans back to the standard over-the-shoulder perspective

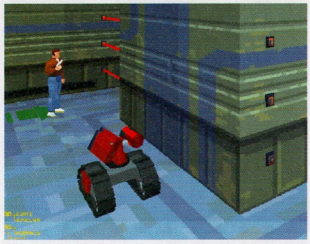
must cut off the generator in the teleporter room, free Professor Bergstein, escort the professor to the teleporter room, and engage the nuclear reactors using the computer program given to him by the professor — all in order to destroy the enemy installation.

Some of the objectives are obvious — but the means by which they can be achieved will require lateral thinking on the part of the player. At the very start of the game, for instance, Conrad will quickly have to work out that some split-second timing is required in order to escape from his cell without being spotted by guard Morphs. Upon leaving his cell, disabling a security camera (a couple of well-aimed bullets should do the trick) is a necessary priority if he wishes to avoid being ruthlessly gunned down by remote control cameras.

The game

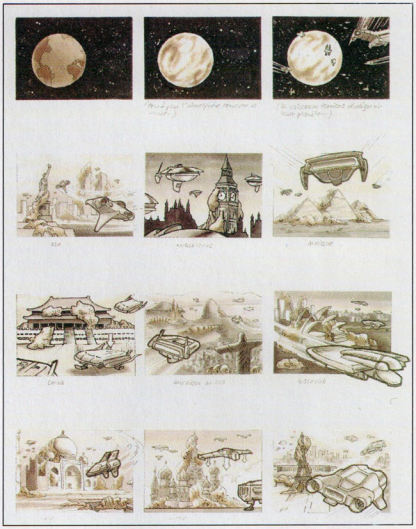
"camera" pans around Conrad as he makes progress. Reminiscent of *Virtua Fighter*, *Crossfire* manages to maintain a superb cinematic air, while never loosening its grip on controllability. The camera snaps sharply back into a tight over-the-shoulder, down-the-barrel view for when Conrad needs to pull his pistol, while the employment of constantly-shifting perspectives keeps dramatic

Conrad must time his escape to coincide with the opening of this door

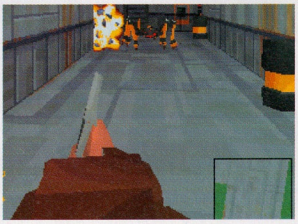




Professor Bergstein is just one of the characters that Conrad will interact with as *Crossfire*'s story unfolds. Here, he must get a computer program from the Professor to help him blow up the enemy installation later on

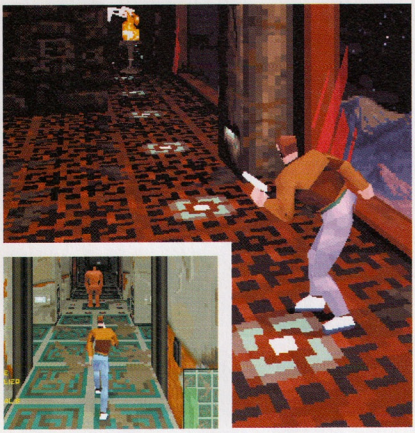






The cinematic sequences are the fruit of many of years planning and design (above). The fluid, ultra-realistic actions of the game character Conrad are the result of motion-capturing the movements of an actor; actually the same man whose actions was rotoscoped from videotape for the original *Flashback* (left). Another robot spider cashes in its chips (below)

ng alphas

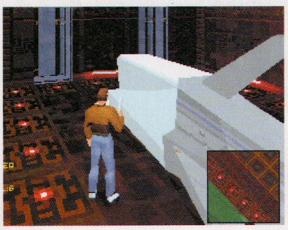


Morphs are the evil alien race that Conrad finds himself battling against, and throughout the game it is always advisable to approach them with cautious steps and a gun in hand (inset). The game enables some sneaky moves as well (above)

tension permanently on the bubble throughout the rest of the game.

At the start of the game, Conrad manages to arm himself with a basic pistol and a shield. The pistol can be loaded with various types of ammunition (ranging from explosive, armor-piercing and plasma rounds through to the state-of-the-art homing bullets), while the shield protects Conrad from limited amounts of damage, depending on how much energy drain Conrad has suffered, and how many replacement charges he has managed to collect. Throughout the game our man Conrad will encounter Morphs in various incarnations, be they disguised as giant, robotic spiders, or simple prison guards.

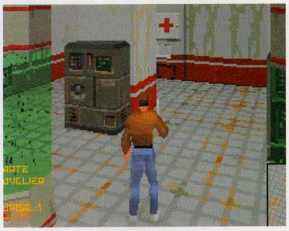
If Delphine can balance the gameplay in *Crossfire* with its drop-dead gorgeous visuals, Electronic Arts (the company publishing *Crossfire* in the US) will find itself with a winner. This is the direction the interactive movie has to evolve in if progress is to continue.



Conrad will often come across objects which require thorough investigation — and even a little detective work — to ensure that the right course of action is taken. Should he blow this rocket up, or use it?

And while prerendered, video-based worlds and scenarios are fundamentally restricted in scope, *Crossfire* — in the French tradition of breakthrough games such as *Alone in the Dark* and *Flashback* — is the next step toward the holy grail of game development. It's a game with the split-second interactivity of *Doom* and the cinematic drama of a Hollywood blockbuster.

The success or failure of *Crossfire* could well represent the gaming industry's chance to build its future or seal its fate in one fell swoop. It all comes down to how well the finished product actually plays. If there was a complaint with *Flashback*, it was that the game took second place to the graphics: progress was often achieved by trial and error, and relied on too much chance. But Delphine claims that this is all history — and that *Crossfire* plays every bit as good as it looks. ng



Conrad's scanners keep him updated as to what lies in the immediate vicinity

Relax, and enjoy the ride

As has rapidly become the tradition in PC games (and in the CD-ROM-based consoles), prerendered cinematic sequences are used to break up the action. *Crossfire* is no exception. Delphine's SGI artists have attempted to keep the style and "feel" of the cinematic cut-scenes in style with the rest of the game, to make the leap between interactive and noninteractive segments as seamless as possible.

The scenes help the story along, and make the screen-shots on the packaging look better, too











Caught in the Crossfire

Track Record

'French games don't travel' is the conventional games-business wisdom. But Delphine has had its fair share of success:

Future Wars
1988
Amiga, Atari ST

Operation Stealth
1989
Amiga, Atari ST, PC

Cruise for a Corpse
1991
Amiga, Atari ST, PC

Another World
1991/1992
Amiga, Atari ST, PC, SNES, Genesis

FlashBack
1993
Amiga, PC, Genesis

Crossfire
1995
PC and PlayStation

NEXT Generation talked with Paul Cuisset, (top photo, far right) head of Delphine's *Crossfire* project...

NG: After the phenomenal success of the 2D game *Flashback*, why move to the world of 3D for *Crossfire*?

Paul: We started with the idea two years ago, and the idea was to do the same game again but in 3D. It was risky, but it was a great challenge.

NG: How else is *Crossfire* an evolution from *Flashback*?

Paul: The player is treated differently in this game, and there's more of a story. There's more dialogue in *Crossfire*, and Conrad isn't quite as alone as he was in *Flashback*. This time, there are people who are working with you.

NG: Do you believe that traditional, sprite-based animation is soon to become obsolete?

Paul: Yes. I think so. Three dimensions give us so much freedom in how we can tell a story and what we can do with the player. So, 3D, for us, is the future.

NG: Why do you think that French developers — such as Delphine and I-Motion — have a tradition of innovating new graphic techniques?

Paul: I don't know. I think it's just a matter of having started off this way, every time we finish a game and start on the next we are thinking what we can do better, and where we can take the graphics further?

NG: Will Delphine continue developing for the PC, or are you also excited by the power of machines such as Sony's PlayStation and Nintendo's Ultra 64?

Paul: Yes, we are excited about the new systems. But these systems will support different markets, and our games may not always translate so well to those markets.

NG: Do you think that this next generation of consoles could benefit from the sophistication and complexity of games like *Crossfire*?

Paul: Yes, but the problem that you have with a console is the limited interface a player has with the program. You only have the joypad, whereas with the PC obviously you can use the whole keyboard. So you have to make things easier and much more straightforward.

NG: But you must be excited — especially coming to the end of *Crossfire* — at the polygon-handling abilities of these systems?

Paul: But I don't think that the need of polygons is so great. I think the need of fresh ideas is much more important. A good game is not good just because of polygons.

NG: So, what you are saying is that the next generation of consoles won't necessarily bring improvements in gameplay?

Paul: No, I think gameplay will also improve because developers such as Delphine will have to develop games for both the consoles and the PC, and so we will see a merging of game styles. And the combination of the dynamic action games that you would normally find on a console with the more sophisticated PC games has to be a good thing.

NG: What has been the most difficult part of the *Crossfire* project?

Paul: Making the move from 2D to 3D was very difficult; everything we had done in the past was 2D.

NG: What kind of sound and effects will the game feature?

Paul: For the cinematics there will be direct-from-CD soundtracks, but then, during the game, sound will be generated on soundcards.





Delphine's staff include many alumni from I-Motion, the pioneering French publisher responsible for the *Alone in the Dark* series of PC titles. Delphine's sister company is Adeline, the Lyon-based outfit responsible for the 1994 cult hit *Relentless*





Delphine first started as a music publisher, and shares the best equipped studio in Paris (top). Motion-capture cameras (bottom)

NG: How important do you think the cinematic sequences are to the overall effect of the game?

Paul: I must be careful what I say here! I don't think that they are very important. They are useful to tell the story, but what is most interesting is the game itself. We thought about not putting in the cinemas at all, but in the end, we decided that we should.

NG: One big trend in gaming at the moment is the growth of networked, multiplayer games. Did you ever think about trying to adapt *Crossfire* into a multiplayer game?

Paul: Yes, we thought hard about that. But the problem is that the game wasn't designed for this from the start, so if we wanted to include multiplayers then we would basically have to start all the way from the beginning. But the idea of, perhaps, designing some new levels and extending the story line for this purpose is interesting to us.

NG: *Crossfire* is kind of like *Doom* for grownups — in that it's a similar 3D, virtual world, but with more story, plot, and strategy in the place of the trigger-pumping gore. What other differences will graduates of *Doom* find in *Crossfire*?

Paul: Well, obviously, *Crossfire* is not just killing. But another crucial difference is that *Crossfire* is not a game that can be played for just five minutes — you have to get into *Crossfire*, and then you'll enjoy it and become hooked. ng

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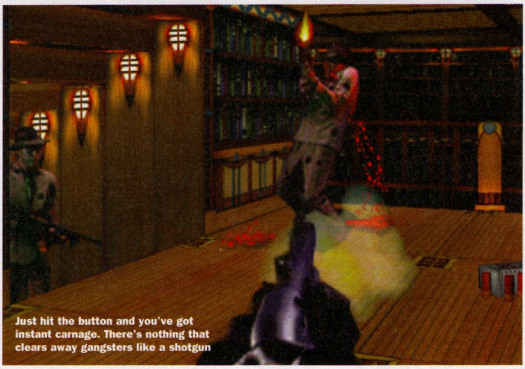
Killing Time

3DO's answer to *Doom* shows off new aspects of the system's graphic muscle

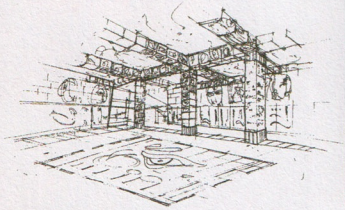
Format:	**3DO**
Publisher:	**3DO**
Developer:	**Studio 3DO**
Release Date:	**June**
Origin:	**US**



Every now and then the ghosts will appear and give the player information on the history of the house



Just hit the button and you've got instant carnage. There's nothing that clears away gangsters like a shotgun



Rooms were sketched out in incredible detail before they made it to the 3DO's screen



***Killing Time*'s 3D actors provide players with an eerie army of foes to assault**

Along with *BladeForce*, Studio 3DO's new *Killing Time* prepares to give 3DO owners something to put up against the swarm of console-based action titles recently released. By mixing the best of *Doom*-style arcade action with challenging puzzles and a rewarding plot line, the developers have created an absorbing hybrid with a feel all its own.

Reminiscent of Virgin's *The Seventh Guest*, the game places you in a haunted mansion looking for a way to escape. In order to find your way out, you'll have to avoid an army of supernatural servants who've been trapped since a party in the '20s and doomed to serve for all eternity. Fortunately, not all of the ghosts are unfriendly, and several will urge you forward, giving small clues on exactly how to free the evil house from its temporal curse.

After a few minutes of play, it's easy to see why *Killing Time* is more than your standard wander-and-shoot retread. Each of your 17 enemies attacks with varying special weapons, ranging from crazed cleaver-wielding chefs, to undead huntsmen who have mistaken you for a duck. All of these restless corpses were filmed in full video shot from every angle to provide a surprisingly realistic 3D, animated experience. Puzzles blend in with the story line and require both a sharp mind and keen eye to finish correctly. As players make their way through the various corridors and challenges of the house, they will gain the power necessary to continue to more difficult areas in the form of more devastating weapons and in their own innate abilities.

Killing Time is certainly destined to be a title that causes people to take a more serious look at the gaming capabilities of the 3DO.



The concept art shows signs of a seriously twisted mind

develop games on saturn

spaceship not included

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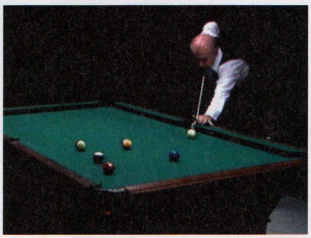
Cross products ltd

Virtual Pool

Format: **PC CD-ROM**
Publisher: **Interplay**
Developer: **Celeris**
Release Date: **Early June**
Origin: **US**

Celeris and Interplay bring military-grade physics, realtime frame rates, and pool champion Lou "machine-gun" Butera to the PC for an unparalleled pool/snooker simulation

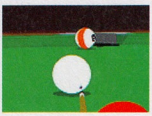




Why are your shots always turning into follow shots? Practice until you get it right (above). Take some tips from the master of Eight-ball, Nine-ball, and Snooker, Lou "Machine-gun" Butera (right)

Rack 'em! It looks like the people at Celeris and Interplay have done the unthinkable by going about a pool game the right way. *Virtual Pool* has the most accurate physics to date for a PC pool game, and no other high-resolution, full 3D simulation on 486 hardware even comes close to this thing.

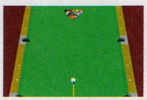
The problems with most pool/snooker videogames, of course, begin at the conceptual level; pool is a game of stance and perspective —among other things — and the typical overhead view usually presented is one a pool player simply wouldn't normally have: it looks wrong, feels wrong, is wrong. *Virtual Pool* comes as a major victory over the flat screen, treating both the pool table and the balls as true 3D objects to be rotated around and viewed from any angle the player chooses (from the boring-old-plan view for strategy's sake to the lurk-and-hunker perspective down the cue for those crucial, hair-fine cuts), and from



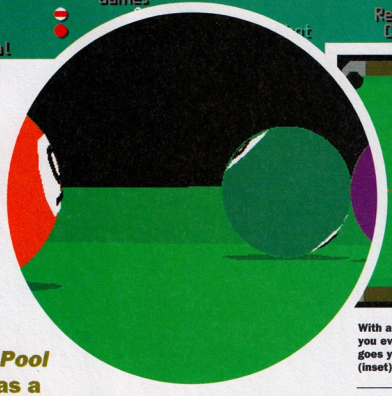
The table view enables close shots to fall just where you want them

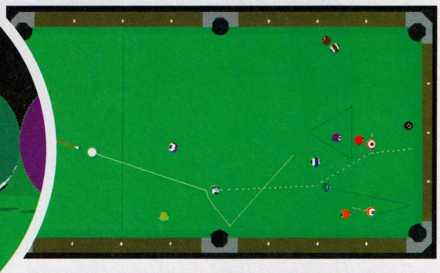






Video clips (left) portray the visual handling of a pro for shots otherwise unimagined. Break (left) and choose sides





With a tap of a toggle key, you can see where all the balls will fall before you even take your shot: Right English, three-rails, off the stripe, and down goes your target (above). The many perspectives, like this extra close-up (inset), enables the player to actually improve your real-world pool skills

Virtual Pool **comes as a major victory over the flat screen, treating both the pool table and the balls as true 3D objects**

any distance. *Virtual Pool* serves not only as a game in its own right but as a tool for actually improving one's real-world pool skills, a feat which simply hasn't been accomplished before by a video pool product. Features include variations on gameplay (Eight-Ball, Nine-Ball, Straight Pool, Snooker, etc.), a trick shot library, a supercool projected-course option which overlays the table surface with a toggle vector display, showing the ultimate path for every single ball affected during a shot, full-motion video segments spotlighting pool master Lou "Machine-Gun" Butera, and, most of all, dead-on motion (including realistic curved paths, simultaneous collisions, and realistic cue draw/follow-through/massé English) at 30 to 60 frames per second.

The physics in the game are top-notch, beautiful in fact (Celeris formerly designed submarine tracking software for military applications, so it has some experience in this area), and so assiduously exact that balls struck with a low reverse spin actually slide across the felt before they begin to rotate, a fact which will mean exactly nothing to you if you aren't a pool freak, and everything if you are. ng

Minnesota Fats
The Pool Master

Format: **Saturn**
Publisher: **Data East**
Developer: **Data East**
Release Date: **September**
Origin: **Japan**

Data East brings its pool legacy to the Saturn in hopes that 32-bit billiards will be the wave of the future



The sharp Saturn graphics bring the pool table to life as closely as possible



Stay "terrestrial" on the table, or go airborne with a trick jump shot like this (above)

Data East, the recent makers of such titles as *Fighters History, World Heroes,* and *Side Pocket,* is orchestrating its first next generation game. Instead of venturing into a new, possibly risky project, the company has stuck with a game it knows. *Pool Master* is the high-tech sequel to the mildly successful, 16-bit billiards game, *Side Pocket.*



The story mode features several FMV interludes. Let's just hope they don't get in the way of playing the game

Instead of venturing into a new, possibly risky project, Data East has stuck with a game it knows: a high-tech sequel to the 16-bit billiards game, *Side Pocket*





If you've been in touch with the Data East marketing staff, you might recognize a couple of these opponents

While *Pool Master* is hardly a gauge of the Saturn's power, it does promise to take the console pool game to a new level. The game features an array of seven popular billiards games — Eight-ball, Nine-ball, Three-ball, Rotation, 14-1 Continuous, Cut Throat, and One Pocket — as well as a massive collection of trick shots. The game can be played in a Versus Mode, Tournament Play, A Betting Feature, and a FMV-enhanced Story Mode.

Whichever way *Pool Master* is played, the sharp, digitized pool table and pool balls, along with the realistic and simple gameplay, make it an easy game to jump right into. *Pool Master* also features a biographical look at Minnesota Fats that is unnecessary, but interesting nonetheless.

As the game nears completion, it's still missing a few angles that could frustrate billiards fans. If these corrections are made, and the FMV sequences don't get in the way, *Pool Master* could give billiards fans a reason to stay out of the bar. ng

The unnecessary but nonetheless interesting biography of Minnesota Fats details his life in documentary fashion

Daedalus

3D maze shooters are not a genre restricted to the PC — the Saturn and PlayStation are also getting in on the act. But so far, playability has been a quality conspicuous by its absence

***Daedalus* represents an attempt to strike a pleasing balance between visuals and gameplay**

Format:	**Saturn**
Publisher:	**Sega**
Developer:	**Micronet**
Release Date:	**Out now (Japan)**
Origin:	**Japan**







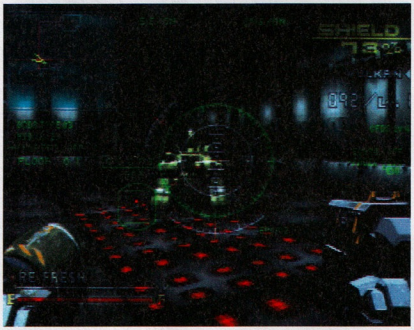
The prerendered intro sequence in *Daedalus* includes the usual range of sci-fi imagery. It all adds to the atmosphere

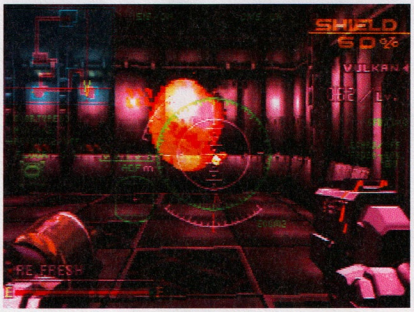
The Japanese fascination with *Doom*-type games has already had an impact on the release schedules for the next generation machines. After *Kileak The Blood* and *Space Griffon* for the PlayStation comes *Daedalus* for the Saturn.

Awkwardly similar to *Kileak* in appearance, *Daedalus* presents a familiar assault suit scenario set on a satellite installation — the "*Daedalus*" of the title. The peaceful ex-Earth colony has been attacked by terrorists and you, as part of a squad of assault soldiers, must track down and eliminate them.

Kileak The Blood failed largely because of its lack of depth and the repetitive nature of the game environment. Few would deny *Kileak*'s incredible atmosphere — generated largely by the impressive interweaving of FMV sequences and realtime graphics — but it was doomed without a strong game at its core.

Daedalus represents an attempt to strike a more pleasing balance between visuals and gameplay. Like *Kileak*, it makes extensive use of streamed prerendered footage, but to enhance the central blasting action it also offers a greater number of usable objects, countless secret passages and hidden traps, and a complex but compact display incorporating all the assault suit's controls and indicators.

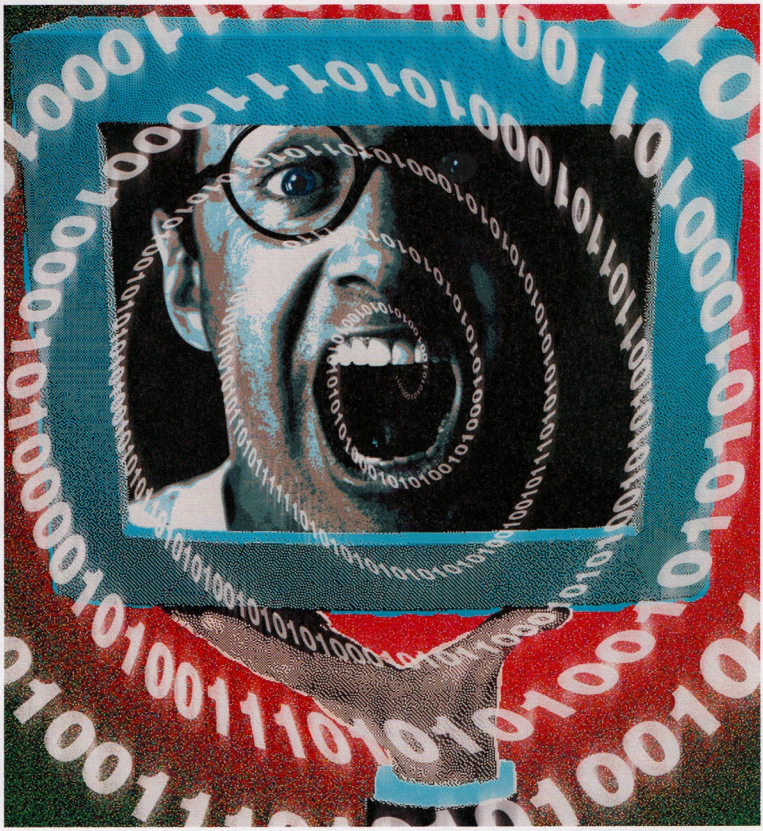




The Saturn should be able to manipulate *Daedalus*' dark environments rapidly (top). Another intruder takes a beating (above)

If all of the pieces come together as Sega plans, the Saturn could find itself playing host to the type of game that has, until now, quietly eluded the auspicious PlayStation.

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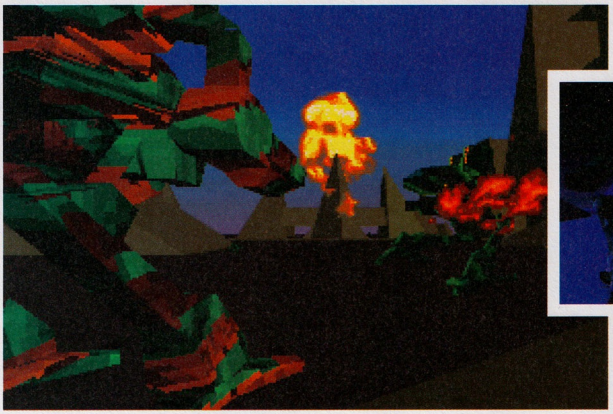
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Damage is location specific, and well-placed hits will reward players with surprisingly realistic smoke and fire



It is important to keep track of enemies who are below your mech's field of view. Watch out for attacks from behind

MechWarrior 2

After weathering a two-year delay, Activision's ultimate in mech simulations is finally prepared for release

Originally planned for an October '94 release, *MechWarrior 2* has endured a long journey on its way to final completion. In fact, the development team that is now finishing up the title is, with the exception of a few members, a completely different staff. Despite this midstage switchup, development problems, changing technology, and the release of competitive products, Activision has stayed firmly behind the project, constantly stating that *MechWarrior 2* would be the mech game to end all mech games. It looks like Activision may be right.



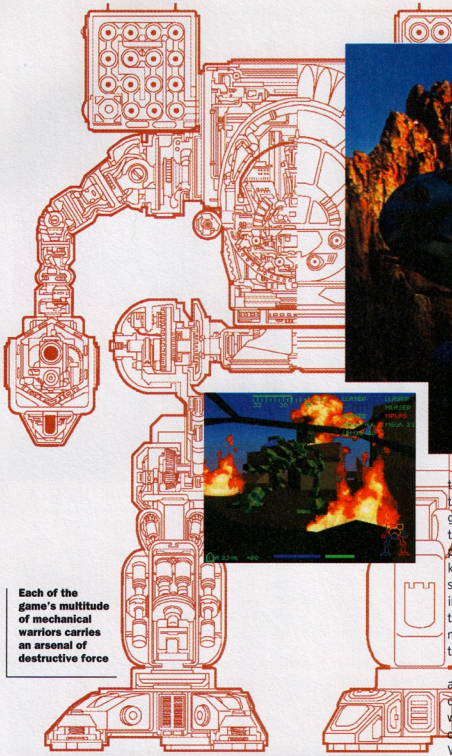
Multiplane terrain makes for vicious attacks from above. Stay alert!

Like the original *MechWarrior*, *MechWarrior 2* places players into the postapocalyptic world of FASA's pen-and-paper roleplaying game *BattleTech*.

Format:	**PC CD-ROM**
Publisher:	**Activision**
Developer:	**Activision**
Release Date:	**June**
Origin:	**US**

Banished from Earth, warrior groups — known as clans — fight for resources, honor, and the chance to lead the assault on their ancient homeworld. Starting as a rookie in one of two of the warrior groups, Clan Wolf or Clan Jade Falcon, you must work your way up through the ranks to become the "Khan" of your clan, and then launch a campaign to become Il-Khan, the warlord who will lead all of the MechWarriors back to

Banished from Earth, warrior groups fight for resources, honor, and the chance to lead the assault on their ancient homeworld



Each of the game's multitude of mechanical warriors carries an arsenal of destructive force

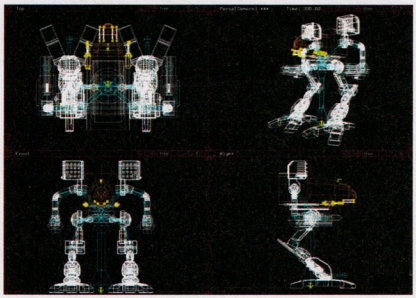


MechWarrior 2's intro graphics and animation sequence are breathtaking, carrying PC imaging to a new level (above). The cockpit view will give you constant updates on direction, damage levels and weaponry (left inset)

the Earth. While building the game, the team stayed in close contact with gaming gurus at FASA, making sure that it kept the game as close as possible to the original *BattleTech*. By keeping mech designs true, recreating scenarios from guidebooks, or incorporating historical backgrounds that fit in with the existent game mythos, the team hoped to replicate the true feel of the original RPG.

Even with the wealth of information about the *BattleTech* universe to draw on, a knowledgeable and creative crew was needed to bring these fantastic creations to life in a realistic manner. While the second team was able to use much of the technology from the original development crew, the art had to be redesigned from ground zero. Technical minds including engineers, industrial designers, and former NASA personnel worked with the 3D artists to make the movements of the immense machines seem smooth, lifelike, and physically realistic. To top the project off, Activision called in a well-known special effects company — the staff won't hand out any specific names just yet — to do the intro sequence, and design some of the game's more impressive visual sequences.

MechWarrior 2's art is more than just a collection of beautiful computer displays. The job before the design team's 3D modelers was to create



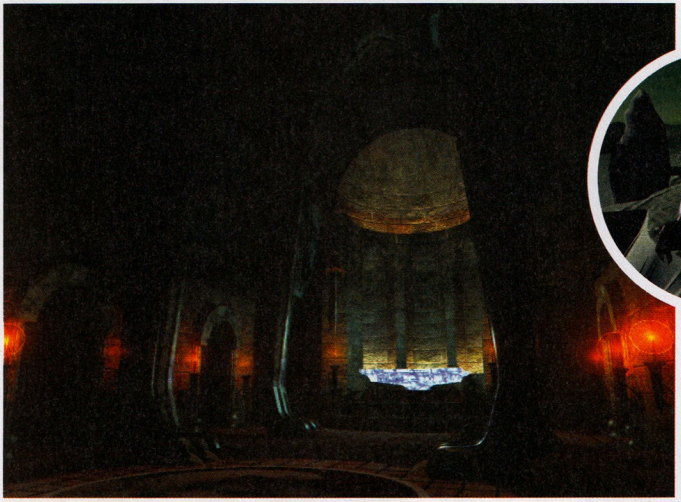
A design blueprint of the immense Madcat. During program development, *MechWarrior 2*'s design team worked as close to RPG plans as possible



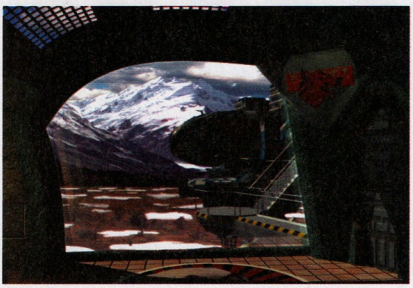


Backgrounds are rich and detailed, even in the night time sequences (above). Unlike flat plane sims, terrain plays a big role in the strategy of mech combat (below)

ng alphas







Clan Wolf's great hall is as grim as the powerful group's warriors (above). As fits their name, Clan Jade Falcon's clan base is perched high atop a lofty cliff (inset right). In the training areas, players will have a chance to test their skills before rushing into battle (below)

realistic machines that stand as tall as an office building in full 3D. The end result is truly spectacular and does an amazing job of pulling players into the game world. The average mech, when finished, is made up of 300 to 400 fully texture-mapped polygons to achieve a painted metal look, and Gouraud shaded to remove any hard edges on the now completed model. The team was also in charge of drumming up realistic terrains that would offer players a true 3D environment in which to fight. And, for the first time, players will get a chance to achieve better shooting angles by standing on hills or mesas; hide from their opponents in canyons or craters; or plan ambushes from behind mountains. Other graphic features will include realistic impact response showing damage in the appropriate location, fantastic explosions, weapon effects, and a virtual cockpit.

In the style of a traditional sim, players will have the choice between flying single missions and entering into one of the two carrier modes. Each of the carrier modes will play completely differently, offering new play experience for second-time players. Each of the two careers are about 25 missions long with each mission lasting from three minutes to an hour. Tasks can be as easy as a simple patrol mission, or may require immediate conflict as with the scramble and search and destroy sequences.

Available in June, *MechWarrior 2* will handle all multifunction joysticks, and will also offer full support for many more popular head-mounted displays. The initial release will also support one-on-one modem and network play, with plans for a multiuser network pack to be shipped soon. ng



A nasty leg hit takes one of the combatants right out of the action



Excess damage to critical areas will turn you into a walking weenie roast



Mech movement is fluid and life-like even during the heat of battle

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BladeForce

Studio 3DO's first action title — a menacingly dark utopia — sets a bright new standard for development to come



The future isn't what it used to be. These stoic killers are the criminals who now hold the city in their power, and they aren't just your average Mafioso

Format:	**3DO**
Publisher:	**3DO**
Developer:	**Studio 3DO**
Release Date:	**June**
Origin:	**US**



Shown above is a quick glimpse at the original concepts and the finished images for *Blade Force*'s master villains

BladeForce is one of the first pure games to come out of the Studio and it delivers a smooth, high-action game that bodes well for the future of the development team as well as the 3DO console

While the hardware gurus at 3DO prepare to turn heads with their M2, the fledgling Studio 3DO team is busy creating hot, new software that shows off the power behind the existing machine. *BladeForce* is one of the first pure games to come out of the Studio and it delivers a smooth, high-action game that not only bodes well for the future of the development team, but also for the well being of the 3DO in general.

The basic story is simple. Far in the future, a gang has managed to take control of an entire city. Armed with a blaster and a Personal HeliPak Flight Suit, you must travel through the city to capture seven criminal ringleaders. Each level is broken up into four sectors of increasingly difficult obstacles that will require a quick hand on the joypad for hours on end.

Even though this sounds like standard action game fare, *BladeForce* is unique in its execution. Players take control of the hero, watching him from behind a swinging camera angle that the Studio has christened "Bungi-cam." While moving around in the virtual environment, gamers can move their character in each of the six directions with full freedom of motion. Once basic flight is mastered, players buzz around a futuristic landscape, destroying enemy installations, looking for bosses, and engaging in your standard hero-like actions. The entire game is almost as fun to simply watch as it is to play, and many players will find themselves



The city's many towers pose the biggest threat early in the game



The animated intro screens show a brand new level of graphic detail for the 3DO





The behind the pilot "Bungi-cam" takes a little getting used to (top). Targeting is a science unto itself and requires a steady hand (above)

ignoring the action in order to just explore the world around them.

BladeForce touts some truly impressive graphics designed to deliver players into another reality. In its final form, the game will contain more than 500,000 fully texture- mapped polygons fully computed in 3D form. This breaks down into 16,000 true 3D objects and a total of 76,000 polygons in RAM per level. Using a specially designed engine that may be used in developing future Studio 3DO games, the team placed objects rendered by the art staff onto the level maps by hand, changing the weaponry and fortresses locations during testing to perfect the challenge.

Due out sometime in June, *BladeForce* promises to launch a new era of gaming for the 3DO. In a short amount of time, Studio 3DO has proven that it has both the technical know-how and the design creativity to deliver quality titles. Now all we have to do is wait and see what's next. ng

Zahdnost: The People's Party

While the design team of *BladeForce* gears up for the game's release, another group of Studio 3DO developers is working on a game better suited for the gamer with an eye for the bizarre. *Zahdnost: The People's Party* is an FMV enhanced board game that takes place in a totalitarian country that has just achieved its independence, relatively speaking. Players take on the role of exparty members competing in an incredibly strange game show for the capitalist treasure of fabulous cash and prizes. Losers are dealt with more harshly. Full of more than 2,000 different puzzles including video-jigsaw puzzles, memory-based mind-teasers, and pop culture quizzes, *The People's Gameshow* combines a depth of challenging puzzles with a unique story line to create a title with plenty of possibilities. Expected for release in June, *Zahdnost* is another step forward for both the 3DO Studio, and the 3DO console itself.

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Virtual Hydlide

Sega's Saturn release program continues apace, with a spanking new, texture-mapped 3D version of a classic roleplayer that initially wowed Japanese gameplayers a decade ago

***Virtual Hydlide* promises to offer players RPG elements that hark back to the *Ultima Underworld* series**

Format: **Saturn**
Publisher: **Sega**
Developer: **T&E Soft**
Release Date: **Out now (Japan)**
Origin: **Japan**

Sega's latest Saturn project is an update of *Hydlide*, the venerable RPG first appearing 10 years ago in Japan as a computer game and subsequently released as a Genesis cart. You'd be hard pressed to spot the game's lineage in this version because the original's overhead perspective has been replaced by a behind-the-head viewpoint and a texture-mapped 3D gameworld.



Virtual Hydlide spins a tale of a dying kingdom whose ruler, Princess Anne (*sic*), has recently fallen under a spell cast by Bararis, a neighboring sovereign with plans to expand his territory. Playing the rather plainly named Jim, you set out on a quest to restore the princess to her former self by seeking out three fairies who hold the key to her revival.



Many Japanese 3D games offer only simple, single-level mazes. *Hydlide*, however, has slopes, stairs, and a variety of terrains



The lead character in *Hydlide* has been digitized from footage of a real actor



The adventure takes place in all sorts of situations. Here, a flooded mine forces Jim to don his boots

The plot may be uninspiring, but *Virtual Hydlide* promises to offer players RPG elements harking back to the *Ultima Underworld* series. The characters develop as the story progresses, there's a variety of objects and creatures with which to interact, and Jim can run as well as walk through his environment. Although the game resembles Elite's recent 3DO and PC title, *Virtuoso*, the game is certain to be much deeper and more involving.

It's encouraging to see that third party developers are as keen to venture into 3D territory as Sega itself. *Hydlide*'s reputation alone will ensure that the Saturn version whips up a significant degree of interest in Japan, and its universally appealing presentation makes a Western release seem inevitable. ng


Heart

Of Darkness

The latest product of France's pioneering game industry is more than just another sprite-based platformer. **NEXT Generation** talks to the creators of their visually seductive game on the eve of its debut



ng alphas



***Heart Of Darkness* is a sinister adventure combining platform-style gameplay with superb animation and breathtaking cut-scenes. The game starts with Andy running away from school (above)**



The 12-strong Amazing Studio team — headed by Frédéric Savoir (far right) and Eric Chahi (front row, third from right) — has spent the best part of three years working on *Heart Of Darkness*, its first project

Frédéric Savoir and Eric Chahi are tired. They haven't slept during the last 48 hours and are unlikely to get much during the next 48. They finished burning a demo CD in Paris at 6:31 am, caught le Shuttle at 6:45, arrived in London at 10:45, and have been involved in stressful studio recording sessions ever since. At 4:20 pm they're bouncing through the back alleys of Soho in a taxi as **NEXT Generation** quizzes them on the reason for their hectic schedule: *Heart Of Darkness*.

Heart Of Darkness is a game that has been shrouded in near-military secrecy since its inception in 1992. Nothing has been seen of the game by anyone outside Amazing Studio and Virgin. It's taken three years for it to reach this stage, and *Heart Of Darkness* was finally publicly unveiled at this year's ECTS (European Computer Trade Show) in late March.

All this secrecy could, of course, just be a standard marketing ploy. Except that the creators of *Heart Of Darkness* are among the world's most respected game designers (quite an achievement for a French programming outfit).





Most of the scenes in the finished game are remarkably faithful to the artist's original sketches (top), created up to three years ago. Unusually, Amazing Studio used *3D Studio* rather than an SGI setup to render the backdrops (above)



After the initial basic rendering, detailed textures are added to the scene (above). Every screen has up to six "layers" of character movement, so sprites can pass in front of each other. Pressure points initiate CD sequences: Here, Andy pushes the rocks forward, causing them to tumble down the slope

Frédéric Savoir was the lead coder on the original version of *Flashback*, and Eric Chahi was almost singlehandedly responsible for the legendary Amiga game *Another World*. *Heart Of Darkness* could be described as a convergence of those titles. Amazing's aim was to take the platform game to a new level of sophistication; many people think they have succeeded.

"I had no idea it was going to be this great," beams Jon Norledge, the game's producer for Virgin Interactive Entertainment. "We met for the first time at ECTS in April 1992, but I couldn't imagine three years ago what it would turn out to be."

This kind of praise is, of course, to be expected from a producer anxious to talk up his or her product. However, those involved with the project do seem genuinely enthusiastic, to a degree unusual even in the excitable game community. Having seen it, **NEXT Generation** can understand why.

The graphics in *Heart Of Darkness* work so well that even the most clued-in observer is unlikely to notice the programming mechanics behind them. The main character, Andy, alone draws from a pool of 1,600 frames of animation in one direction (most cartridge games have around 1,200 in total). To handle them, Frédéric created a complex game editor whose primary function is to ensure a seamless transition between the various types of movement.

Every frame in the game has a cause and effect list. This strictly governs the change from one set of animation to another and preloads all possible "next" frames into RAM in case they're required. For example, when Andy is running along, the 16 standard running frames are stored in sequence in a loop. If he jumps, the preloaded table calculates which frame of the run he is currently on and

The full-screen prerendered sequences feature animation that looks more like the product of a Disney studio than that of a gamehouse

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Pascal de France was responsible for the fact that every object and character casts realtime shadows on the backgrounds — or, as here, rippling reflections on water. This scene started life as a drawing, which was rendered and then textured (far right, top three pictures)



Andy scales the rock face, swinging from crevice to crevice. All backdrops were prerendered and then had the game logic superimposed on them using the editor developed by Frédéric Savoir specifically for the project

instantly switches to the applicable frame of the jumping animation. This avoids *Another World*-style stop/start blips which could break up the action.

"It's an action adventure," explains Frédéric. "The player can jump, run, fire, swing, shoot, swim, and climb. But we don't want jerking when a player switches from one to another. The player must be in control all the time."

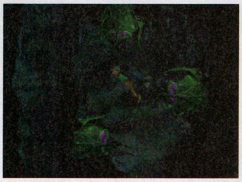
The game also features 27 minutes of prerendered animation which, to avoid any access delay, is stored in memory as you play. This required an inhouse solution to data compression, created by Daniel Morais. His system is specifically designed to retain the minute details that give the animation its lifelike appeal — many commercial compression programs jettison this detail.

The prerendered sequences — which run full-screen at 256x192 with 256 colors on a 486/33 PC with only 4 MB of RAM, and clock in at 10 fps — feature animation that looks more like the product of a Disney studio than that of a gamehouse. Their strength is due to one principal factor: character design. Each character, from Andy, to the sinister Master Of Darkness, to the humorously repulsive Blob, has a well-defined personality. They're impressive enough when motionless, but when animated, they're simply breathtaking. With *Heart Of Darkness*, Amazing has upped the ante, and its competitors will have a difficult time catching up.

What makes the cut-scenes even more remarkable is that they were rendered using *3D Studio* rather than a high-priced Silicon Graphics setup. "We thought about using Silicon Graphics and we tried them," says Eric Chahi. "But they're expensive and so is the



This malevolent-looking individual is Andy's teacher, who drives him out of the classroom at the beginning of the story. His cruel and vindictive nature is pivotal to the plot



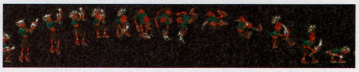




Andy can jump, run, fire, swing, shoot, climb, and even swim (top), all without breaking into a sweat. Amazing went to great lengths to preserve animation continuity, not only for Andy, himself, but also for minor characters like these specters; details like these appear throughout the game







Even Andy's most basic movements use a tremendous number of frames (above). Amazing Studio has proved that sprite-based games still have potential. The return to traditional animation techniques will no doubt be welcomed by many platformer devotees. Team members Stéphane Hamache, Jérome Combe, and Christian Robert (top, left to right)

software. They are very good but when we tested them [end of 1993] they were full of bugs and for the price that is unacceptable. We'd already started using *3D Studio* and so it was quicker to carry on rather than start over.

"We'd never used any 3D packages before. It wasn't easy — it's a laborious and painstaking process — but it's never boring because of the results. When a new scene has been finished, other members of the team gather 'round and admire the work. There's an excitement in the office that you rarely find with 12 people."

Despite the absence of SGI gear, Amazing had some hefty equipment at its disposal. "We started using a 486 DX2/66 but now we're onto a 90 MHz Pentium with 64 MB RAM," says Chahi. "We'd like to use more but the PC doesn't recognize it. It's beginning to become very pricey to buy memory!"

The end seems to have justified the means. Amazing has confounded the cynics by producing *3D Studio*-generated images that actually look unique. The leading PC rendering package has become such a widely used tool in the industry that many games have a recognizable *3D Studio* look.

Savoir and Chahi were determined to make *Heart Of Darkness* different. "We don't want our graphics to look like computer graphics — they're too clean for us," asserts Chahi.

To avoid the blandness of conventional *3D Studio* images, Chahi and Chris Delaporte created all the *Heart Of Darkness* textures themselves instead of using the supplied texture maps to

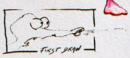
Titles like *Another World*, *Relentless*, and *Heart Of Darkness* are evidence of the alarming concentration of talent in France today

ng alphas

















The Blob's drooling, nasal voice is one of the game's highlights



***Heart Of Darkness*' appeal is largely due to Christian Robert's charming character design. Here, Andy and his dog, Whisky, gaze skyward at the disaster about to befall them**

which most developers limit themselves. The team then added "noise" to the signal to create extra realism.

"It's not like merely watching a spacecraft docking and going 'Wow, that's beautiful,' like many programs are," explains Jon Norledge. "It's not using 3D graphics just to show pretty pictures. It's telling our own story."

And it's a carefully crafted story. Amazing spent the first six months of the game's development process constructing intricate plans of every character, background, animation, and level. ("I've got maps of every single level in the game which date back over two years – and hardly a screen has altered since then," claims Norledge.)

In each of the game's 256 screens, the player has the ability to interact with everything that's visible — it's not just a question of shooting other characters. Shadows are calculated and distorted in realtime, and rippling reflections are created when Andy moves over water. Objects can be picked up and used when they're needed — although there's no set order in which you have to collect them. How long it will take to complete the game is still uncertain, but Savoir hopes that players will return to the game time and time again, lured by the seductive visuals.

Those visuals are perfectly complemented by the game's aural components. The prerendered sequences feature 22KHz 16-bit stereo sound interleaved with the graphics. Sound is perhaps the only aspect of *Heart Of Darkness* that wasn't planned to the last detail years in advance. Although a script was needed for rough lip synchronization during rendering, it still hasn't been determined which actors will provide the final dialogue. The finished game will be released in French, English, German, and Japanese,

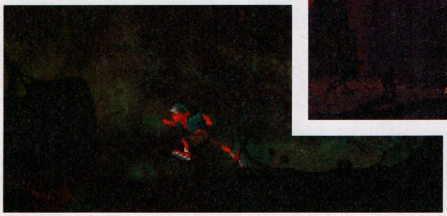


Lead 3D animator Fabrice Visserot created much of the 3D animation in *Heart Of Darkness*. He was assisted by Jérome Combe, Patrick Daher, and Stéphane Hamache











Negotiating each of the 256 screens requires a variety of tactics. Locating objects, storing them, and using them later is a crucial part of the gameplay

Andy is surrounded by specters and tries to escape by clambering up a dinosaur rib cage (above). Note how every character casts a shadow which is distorted according to the surface on which it falls

and different voices will obviously be required for each version (Amazing is currently working with a London-based team on the English dialogue). Big star names are being bandied around by Virgin for speaking roles, but no final decisions have been made yet.

Strangely, considering that they've just spent most of the last three years working on an innovative new method of sprite animation, Chahi and Savoir don't believe that sprites represent the future of videogames. "Realtime 3D is the way forward," Chahi states. However, the duo reckon that the mixture of 2D gameplay and 3D cut-scenes in *HOD* work well.

Chahi thinks the notion that French games have a unique style is exaggerated. "I don't think that French games are inherently different," he argues. "There's no French style per se. It's different styles of different software houses."

Be that as it may, titles like *Another World, Relentless* (NG 1) and, now, *Heart Of Darkness* provide evidence of the alarming concentration of talent apparent in France.

So, does *Heart Of Darkness* represent a major step forward for Frédéric Savoir and Eric Chahi? "Oh yes," they both say quickly. "Each time we enhance the techniques. We're always aiming for more playability, for better control. We'll start playtesting *Heart Of Darkness* soon and that's vital. It's all about the way you feel, is the game nice to play or not?"

That, of course, is the crucial question. If the gameplay matches the obvious quality of the visuals, Amazing Studio will surely have a major hit on its hands. ng

Credits

Main team:
Eric Chahi
Frédéric Savoir
Christian Robert
Fabrice Visserot
Daniel Morais

Additional team:
Pascal de France
Jérome Combe
Patrick Daher
Stéphane Hamache
Chris Delaporte
Jean Frechina
Francis Piérot

Music: Bruce Broughton

Sound editor: Patrice Grisolet

Sound designer: Eric Mauer

Foley artist: Alain Levy

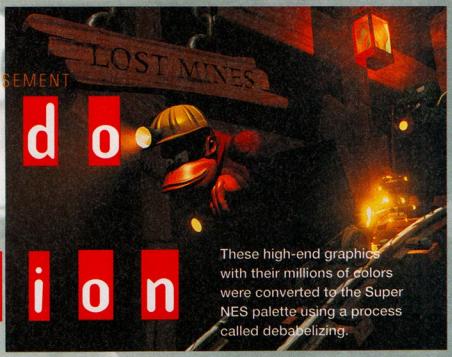
Executive producer:
Jon Norledge



Amazing's Paris headquarters. A real buzz of excitement pervaded the office as *Heart Of Darkness* neared completion. Release is scheduled for the fourth quarter, 1995

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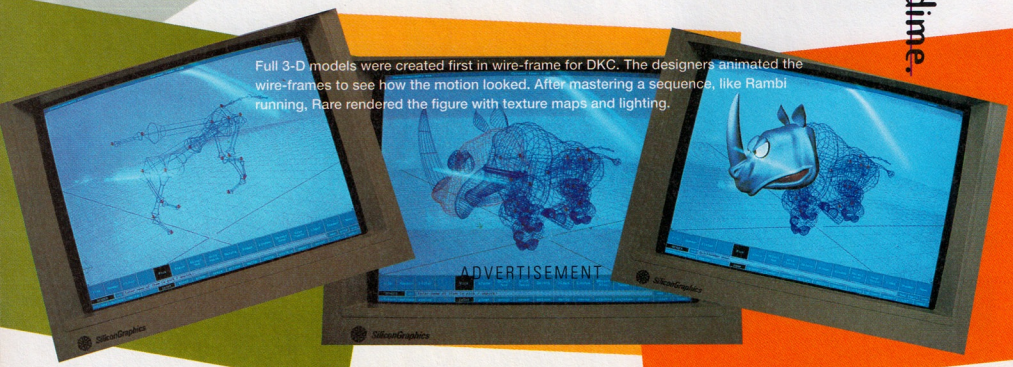
These high-end graphics with their millions of colors were converted to the Super NES palette using a process called debabelizing.

How to boost the performance of your video game system without spending a dime.

At Nintendo, engineers and game designers continually work to enhance Super NES games from the inside out. Stunning new games such as Donkey Kong Country use innovative programming techniques while other games actually have new hardware technology like the Super FX chip built into the Game Pak. You don't need to buy an expensive adapter to play them, either. In fact, with games using ACM, or the FX^2 and SA1, gamers won't have to pay an extra dime for the innovations.

ACM: The Magic In The Machine

So what is ACM? It's a technique in which all the graphical elements of a game are created on high-end, 3-D graphics computers like the SGI Challenge, then converted to run on the Super NES. The team at Rare spent more than 18 man-years creating the animations and backgrounds for DKC. Then they converted the images for the Super NES in a process called *debabelizing*, which reduced the rendered images from millions of colors to 256 or less. By working from the high-end down, Rare achieved a new level of graphics for video games. Tim Stamper, DKC's designer, sees the future like this, "From now on, everyone will have to live up to this game."



Full 3-D models were created first in wire-frame for DKC. The designers animated the wire-frames to see how the motion looked. After mastering a sequence, like Rambi running, Rare rendered the figure with texture maps and lighting.

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SUPER FX2



In Comanche and Dirt Trax FX, from Electro Brain, you'll see far more texture mapping and scaling sprites than in the original Super FX game, Star Fox. According to Jez San of Argonaut Software, the FX² can display 20,000 polygons per second, which is comparable to a high-priced 3DO system.



The latest upgrade of the Super FX chip—the FX²—fits inside a Super NES Game Pak and is capable of manipulating more polygons, more texture mapped surfaces and more sprites. The RISC (Reduced Instruction Set Computer) chip even calculates pixel-by-pixel terrain maps on-the-fly (as in Nintendo's upcoming title, Comanche) to create more dramatic 3-D effects than were possible with the original version of the Super FX.



ACM doesn't require any adapters or special hardware for players, but it does require millions of dollars worth of equipment for game developers. The Challenge Computer at Rare is just one of the Silicon Graphics super computers that were used to create Donkey Kong Country.

The SA1

The most recent breakthrough at Nintendo is the Super Accelerator co-processor. The SA1 fits inside Game Paks like the FX², but the SA1 is a processor like the CPU in the Super NES Control Deck. It can access memory in the Game Pak and work directly with the CPU to provide enhanced graphics, processing speed and arithmetic functions. It runs four times faster than the Super NES CPU, improving performance by up to 500%. That translates into games with more realistic animation and 3-D environments.

DOLLARS AND SENSE

Sega says they want to ease gamers into the next generation, but they're asking $150 for the 32X and Saturn will cost more than twice that. In the meantime, you can spend another hefty chunk on Neptune—the all-in-one 32X/Genesis hybrid. What's that for? To ease you from the 32X to the Saturn? Maybe Sega should ease up on your wallet instead?

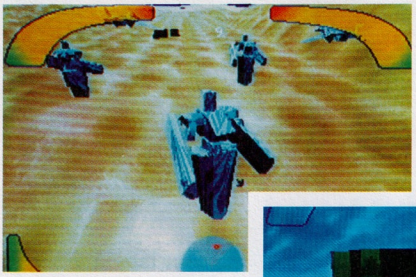
Gamers want better **games** today for the systems they already own. A system add-on or plug-in is expensive and you can't update it. In other words, you're stuck with it. Nintendo's solution makes real sense: upgrade the Game Pak and the software inside with innovations like ACM, the FX² and SA1. As technology improves, so do the games. For no extra cost...and no gimmicks...you can play the next generation of games on your Super NES.

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Extreme Power

There's heavy metal thunder in the air as the PlayStation prepares for the rumbling robots of war

Format:	**PlayStation**
Publisher:	**Profile**
Developer:	**Profile**
Release Date:	**July**
Origin:	**Japan**



***Extreme Power* gives assault suit fans a chance to climb into their own "metal jacket" and indulge in frantic blasting against a variety of enemies**

The Earth government is fighting to subdue a group of insurgent colonists who are in the process of developing a hyper-weapon



The Japanese fondness for technobots has been well-documented. Mechanized "assault suits" have been featured in numerous *anime* films since the 1960s and have also had their fair share of exposure in videogames — *Cybernator* and *Macross: Scramble Valkyrie* are two SNES titles that spring to mind. The latest manifestation of this bizarre (to Western eyes) fixation is *Extreme Power*.

The year is 1996 and the Earth government is fighting to subdue a group of insurgent colonists who are in the process of developing a new hyper-weapon. The player is sent to the war zone in his big robot to squash any thoughts of independence.

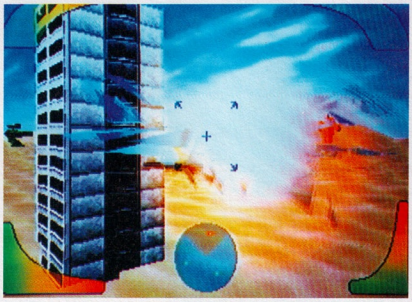


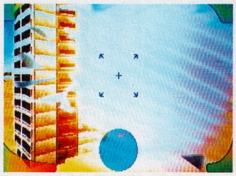
Enemy aircraft present a formidable threat

The graphics in *Extreme Power* play a significant role in making the game environment credible. Beautifully Gouraud-shaded and texture-mapped polygons make up the majority of the scenery, through which you can walk, run, and — in the later stages of the game — fly. A variety of futuristic robots, planes, and fixed installations comprise the cannon fodder.

Extreme Power offers two playing modes: Operation and Combat. The Operation mode allows you to undertake premission tactical planning and provides situation updates during the heat of battle. Switching to Combat mode accesses weaponry displays and opens communication channels to your wingmen. The combat itself can either be







PlayStation texture mapping is now immediately recognizable (see building, top). Spectacular explosions are *de rigeur* in a game like this (above, middle)

played out in full or reduced in complexity. At the end of each mission your progress is analyzed and money awarded according to your success. This can be used to upgrade the specifications of your robot before you embark on the next task.

With the similarly themed *Metal Jacket* (NG 4) due out in April, the stage is set for the PlayStation's own full-scale robotic rumble.

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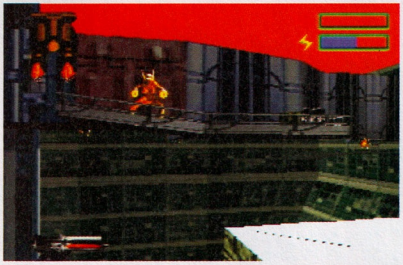
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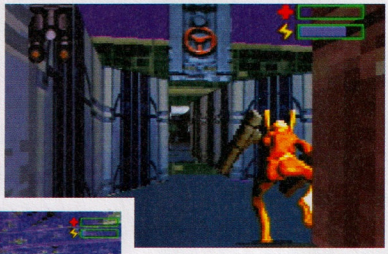
PO'ed

Its title may be something of a mystery, but *PO'ed* seems destined to take the 3DO into a brave new world of top-quality, 3D blasting action

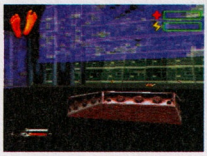


Format:	**3DO**
Publisher:	**TBA**
Developer:	**Any Channel**
Release Date:	**Mid-1995**
Origin:	**US**





Aliens attack from every angle (above and top). Stealth is an effective tactic (above right)



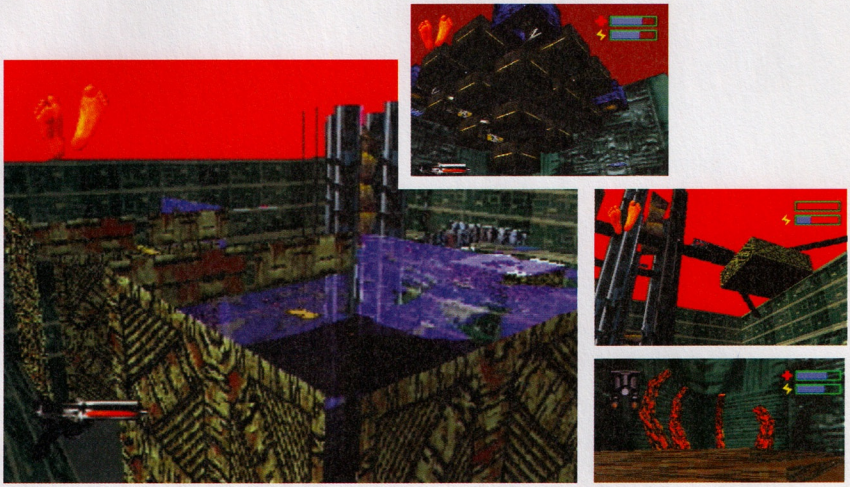


Various elevators are installed in *PO'ed*'s buildings, ranging from metallic arrangements to more futuristic translucent affairs

While Saturn and PlayStation owners tend to look forward to big-name coin-op conversions like *Daytona USA* and *Tekken*, 3DO devotees generally set their sights on more original games. Together with *Immercenary* (**NG 5**), *PO'ed* is a perfect example of software that is set to push the 3DO in new directions in 1995.

Conceived in October 1993, *PO'ed* was, at first, a spare-time project, but its dramatic growth soon necessitated a full-time effort from its five-man team. And so Any Channel was born.

"We looked at games like *Doom*, *Marathon*, and *Dark Forces*, and took what we felt were their best elements," says Any Channel's Russel Pflughaupt. "But we wanted to get away from the



The layouts of *PO'ed* provide level after level of stunning views. The finished game will incorporate 40 levels, all packed with amazingly detailed structures

"If you drop into an area and find yourself getting your butt whipped, you'll be able to pull out and go in search of more powerful weaponry"

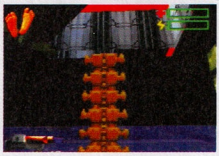
tunnel-based feel of those games, so we made the environments in *PO'ed* very open, and not formulaic at all."

The character you play in the game is a member of a crew assigned to clean up an alien metropolis. On reaching this hostile environment, however, the entire squad (except for yourself — the ship's cook, no less) succumbs to the might of its inhabitants, leaving you to take out the aliens all alone.

PO'ed has a total of 40 areas, each one set in a zone sectioned off from the rest of the cityscape. Walkways, passages, and hangar-like constructions make up the game's futuristic, otherworldly architecture.

At present, the player is able to get around either on foot or by jetpack. The jetpack is ideal for moving at speed through the air, while negotiating the game's many multileveled structures on foot is facilitated by elevators, stairways, and moving platforms. The onfoot controls offer the ability to jump, often giving the game a strange but alluring 3D platform game feel.

"We originally wanted to include a motorcycle and a tank but haven't yet found a way of incorporating their use," adds Pflughaupt. "The level designs, due to their size, are more suited to negotiation on foot and by pack, but if we can get them in, we will."



On foot it's possible to use these ladders to gain access to higher levels

Refreshingly, Any Channel has avoided the level-by-level approach usually adopted for this type of game. "The structure will be free-form so that you won't be restricted to hitting a level at a time in strict sequence," explains Pflughaupt. "If you drop into an area and find yourself outgunned and generally getting your butt whipped, you'll be able to pull out and go in search of more powerful weaponry."

PO'ed's looks alone are likely to win it fans: there are few games that match the beautifully fantastical flavor of its real 3D environments. And Any Channel has the right idea: blowing away aliens with high-powered weaponry in 3D is never going to be a chore. ng

Astal

Sega's striking new Saturn platformer looks good enough to eat. But how tasty will the actual gameplay be?



Format:	**Saturn**
Publisher:	**Sega**
Developer:	**Sega**
Release Date:	**May (Japan)**
Origin:	**Japan**

Vibrant, fairy-tale backgrounds meld with beautiful character design to create a fantastic world to explore

The Saturn is proving that new game machines don't necessarily mean new types of games. Sega's console may be a bona fide next generation system, but traditional genres are sure to form a major part of its software catalog.

One of those genres is the platform game. *Clockwork Knight,* already preparing for a second visit after its less than impressive first outing (the original title was only the first part of a 12 level series), will soon be joined by Sega's latest 2D platform game, *Astal.*

Astal's forte is definitely its graphics. Warm, Disneyesque draftsmanship is a welcome departure from the antiseptic lines of most of today's computer animation. Vibrant, fairy-tale backgrounds meld with beautiful character design to create a fantastic world to explore.

Graphics are enhanced by skillful integration of foreground, background, and characters as Sega has managed a coherence and depth conspicuously lacking in many modern games.

But without the playability to match, platform fanatics will be hoping that *Astal* has more than beauty to offer beneath the surface. ng



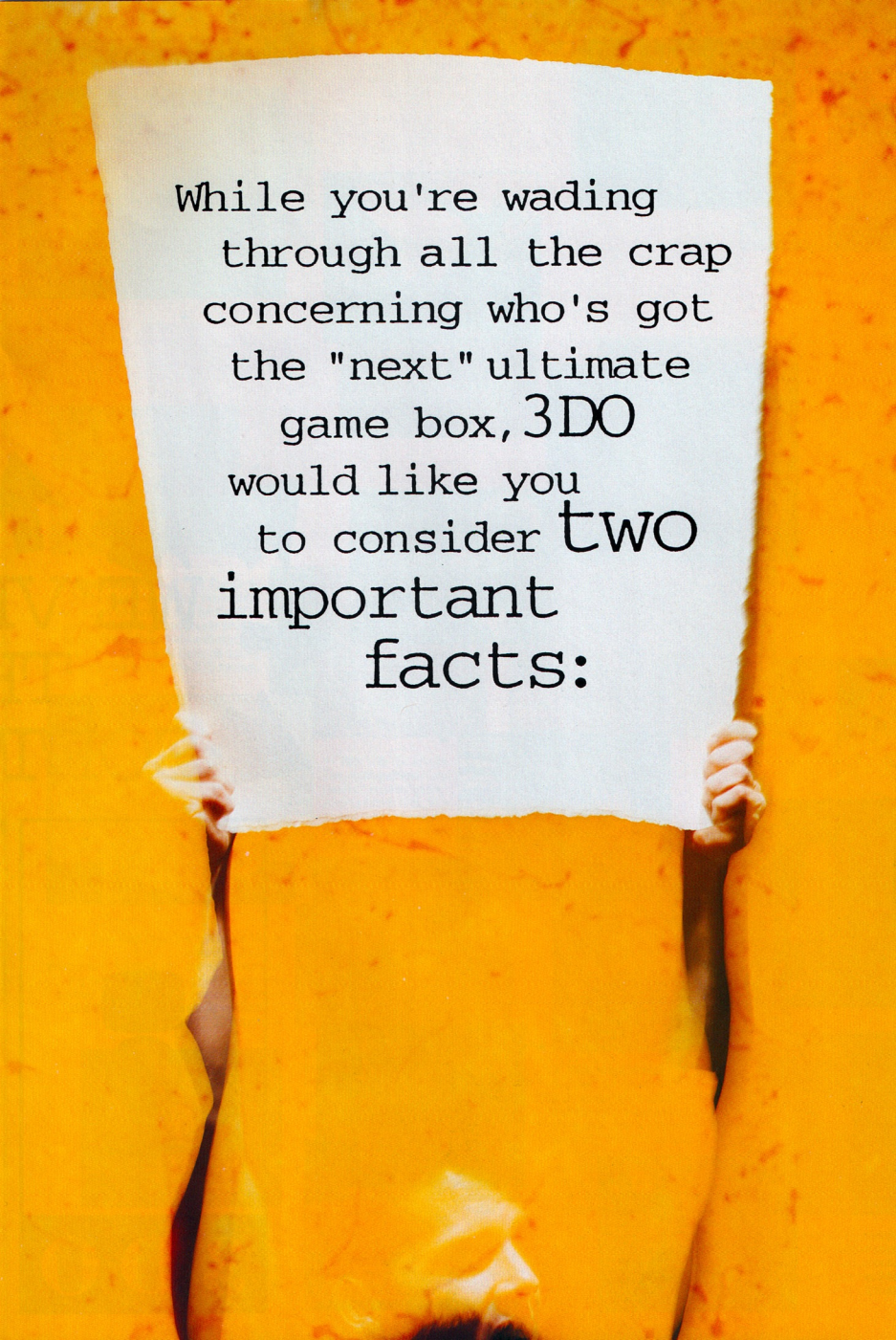


Action may be traditional, but the quality of the graphics distinguishes *Astal* from its platformer peers (below)





Gorgeous cartoon animation (above) breaks up the platform gameplay and provides a visual reward for completing sections of the game


While you're wading through all the crap concerning who's got the "next" ultimate game box, 3DO would like you to consider two important facts:

WE'VE GOT THE HARDWARE.



BEST GAME SYSTEM OF 1994
MIAMI HERALD, DECEMBER 1994

BEST OVERALL GAME SYSTEM/BEST AUDIO
LOS ANGELES DAILY NEWS, DECEMBER 1994

EDITOR'S CHOICE AWARD —1994 BEST GAME MACHINE
ELECTRONIC ENTERTAINMENT, MARCH 1995

THE ULTIMATE SYSTEM OF CHOICE
PHILADELPHIA DAILY NEWS, DECEMBER 1994

BEST SYSTEM OF 1994
DIE HARD GAME FAN, JANUARY 1995

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TIME MAGAZINE, JANUARY 1994

BEST OF WHAT'S NEW
POPULAR SCIENCE, DECEMBER 1993





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adventure featu
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and breath-takin
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stunning 3DO ve



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John Madden Football™ *EA Sports*
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Phoenix 3™ *Studio 3DO*
Galearth is under attack by alien invaders—but all planetary defenses were dismantled centuries ago. You must locate pilots, find hidden ships from millenia past, and counterattack to save your planet. This action/adventure is only available for 3DO systems.

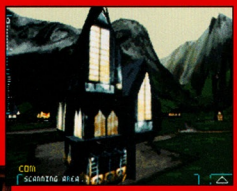


Panzer General™ *Strategic Simulations Inc.*
After blowing the critics away, this award-winning strategy mega-hit invades the 3DO platform. In addition to the campaign game, you can play over 35 progressive scenarios independently as either the Allied or Axis side.

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PO'ed *Any Channel*
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DOOM™
Art Data Interactive
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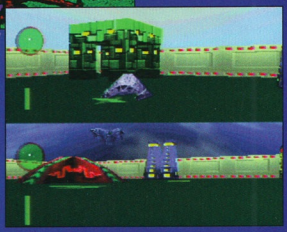
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n Man *Virgin Interactive Entertainment*
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Experience the ultimate arcade action…in your home! This is the latest and hottest version — only available in finer arcades, and on your 3DO system.

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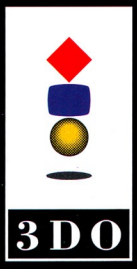
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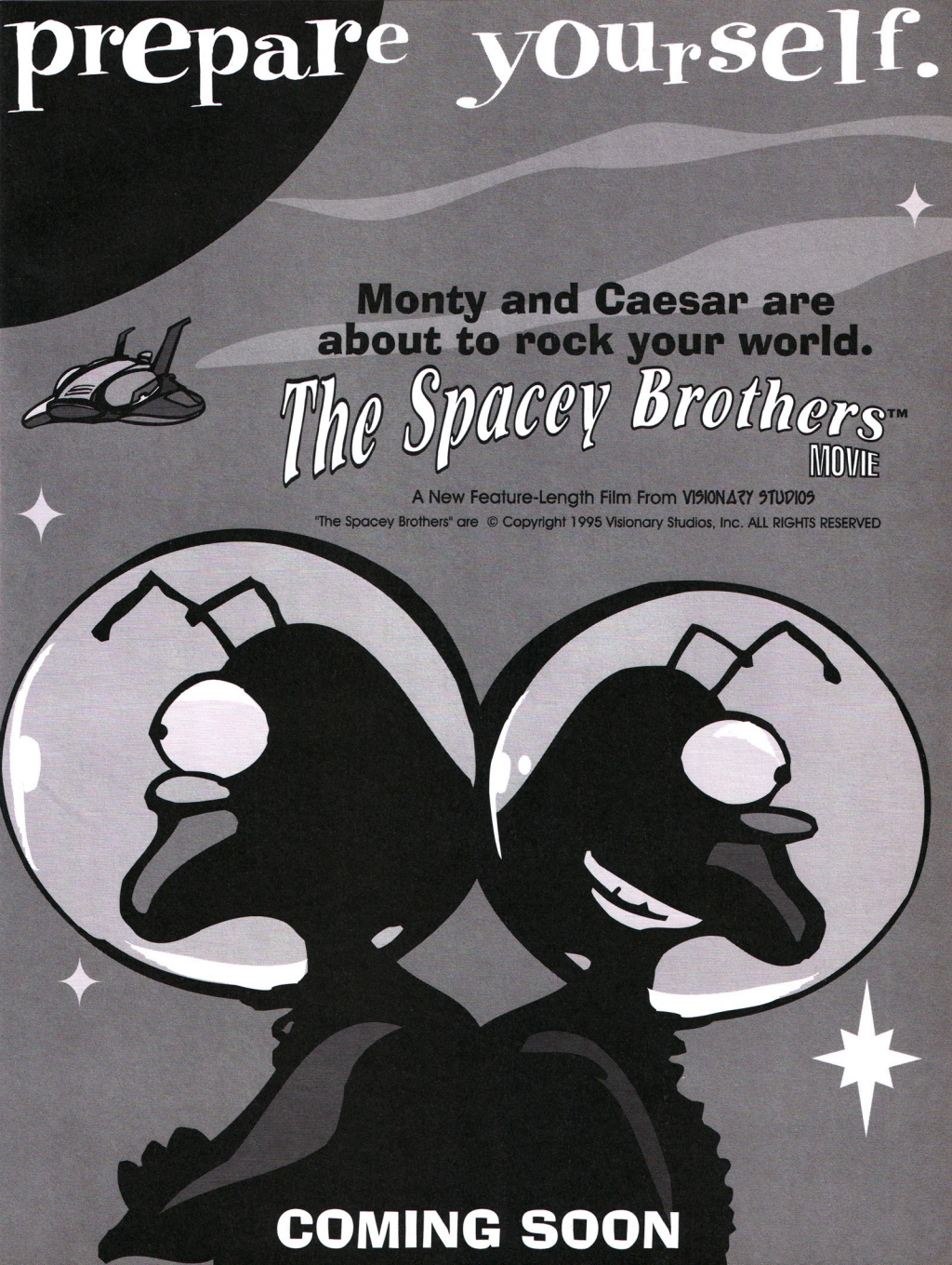
We Got It.
They Don't.

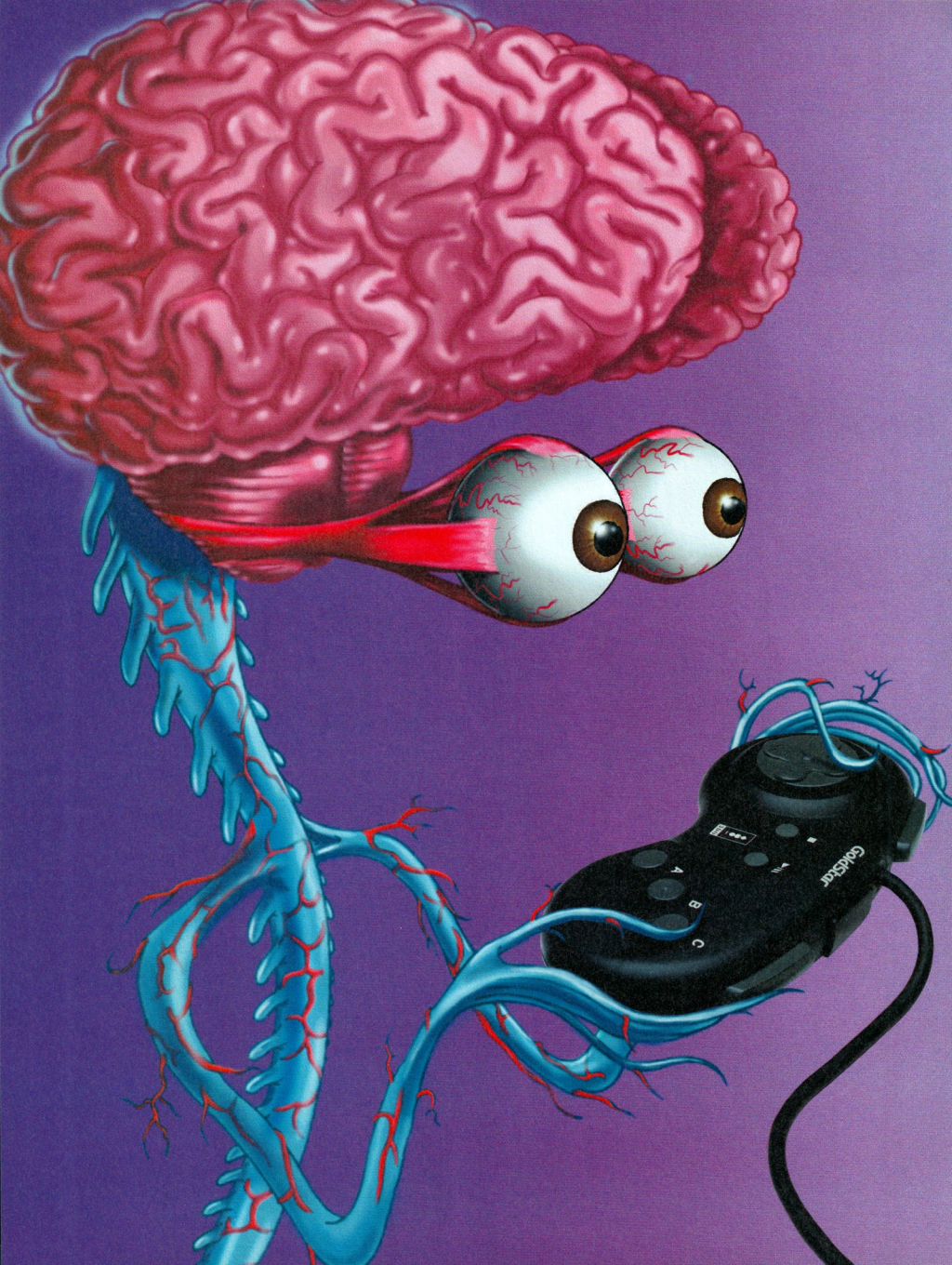
It's as simple as that.



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Panzer Dragoon Saturn **Myst** 3DO **Cannon Fodder** Jaguar **Brutal** Sega 32X **QB Quarterback** Sega 32X
Pizza Tycoon PC **Shining Force** Sega CD **Pool Master** Genesis **Stargate** SNES **Night Warriors** Arcade



Lots of no-bull reviews of the newest videogames

100	Saturn
100	3DO
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109	Macintosh
112	Sega CD
112	Genesis
114	SNES
117	Arcade
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117	Neo-Geo

NEXT Generation is devoted to bringing you the final word on the hottest games each month. We've got the inside dirt on EA's slick new 3DO conversions, fresh from PC archives, and a review of the best Jaguar game to date, as well as some familiar faces rereleased for the Mac. Be sure to take a look at our handy chart below for ratings.

★★★★★ Revolutionary
Brilliantly conceived and flawlessly executed; a new high-water mark.

★★★★ Excellent
A high-quality and inventive new game. Either a step forward for an existing genre, or a successful attempt at creating a new one.

★★★ Good
A solid and competitive example of an established game style.

★★ Average
Perhaps competent; certainly uninspired.

★ Bad
Crucially flawed in design or application.

Saturn

LEGENDARY

Panzer Dragoon

Publisher: Sega
Developer: Sega
Size: 1 CD-ROM
Release Date: September 2



Smooth flight graphics and excellent arcade interface make learning to play a breeze



Breathtaking intro screens set the stage for your adventure

Sega, having formally announced its US Saturn launch, wasted no time in showing off the gaming capabilities of its next generation system. Although *Panzer Dragoon* is just a shooter, the company's latest title orchestrates incredible story animation with brilliant, 3D flight graphics to create what is, basically, the ultimate evolution of *Space Harrier*.

The story breakdown has our hero separating from his friends and coming into the possession of a war dragon and a powerful gun. True to videogame form, the young boy hops on the back of the dragon and sets out to right wrongs, kick butts, and unleash powerful goodness into the world. Gameplay is almost a textbook example of how to make a shooter, complete with flight on rails, plenty of different enemies, huge bosses, slowly increasing difficulty, and silky-smooth weapon control.

In the end, although this game may not appeal to very many different types of gamers, you just can't deny that it's an almost perfect representative of a classic genre.

Rating: ★★★★



Certain enemies require that you use more than one of your many different viewpoints

3DO

Quarantine

Publisher: GameTek
Developer: Imagexel
Size: 1 CD-ROM
Release Date: Available now

Here, you're a cab driver walled in the prison city of Kemo, and calling your job hazardous is like calling the Pacific a big ocean. Like *Immercenary* before it, and the upcoming *Blade Force*, *Quarantine* builds a complete city and sets you loose with the eventual goal of getting the hell out of there. This open-ended structure is good, but it makes a steep learning curve — you have to spend time just getting the layout of the place before you can really begin to play.

Controlling the car takes some getting used to as well — the vehicle tends to yaw and bounce off things — and many of the texture maps could have used some work and been less pixel-ridden, but the game is on balance, once you get the hang of things, and it's cool.

Rating: ★★★



Run down hapless citizens in *Quarantine*

Seal of the Pharaoh

Publisher: Panasonic
Developer: ASK Kodanosha Co. / System Sacon
Size: 1 CD-ROM
Release Date: Available now

This is a first-person, dungeon exploring game very much like *Dungeon Master* or *Eye of the Beholder*, except this one features rendered graphics.

The inventory and battle interfaces are nicely constructed and simple, utilizing a ring system similar to that found in *Secret of Mana* for SNES, but overall, the adventure is repetitive and about as exciting as a long elevator ride.

The instruction book helpfully supplies maps to the first four levels, but there's not a lot of variance to the scenery

3DO

MISSED

Myst

Publisher: Panasonic
Developer: Cyan / Micro Cabin
Size: 1 CD-ROM
Release Date: Available now

Myst's impact on the "multimedia revolution" — widening the appeal to a mass audience — can't be underestimated; therein lies the problem. *Myst* is not what you'd call a gamer's game. Instead, it appeals to exactly the people who think phrases like "multimedia revolution" mean something and want a product that can show off their new CD-ROM drive. While there's no denying that *Myst*'s meticulously designed world is a highly imaginative, monumental achievement in graphic design, and a benchmark for years to come, all that gorgeous scenery dresses up some of the most obscure and repetitive puzzles ever created.

Structural problems abound: The game revolves around a quest to find enough missing pages to release a pair of brothers from the mystic books they've been trapped in, but the game won't let you carry more than one page at a time, which means you have to visit each of the game's four subworlds at least twice. This would be fine, if there were some new challenge in each area the second time around, but there never is — what exactly is the point supposed to be, other than padding out the play time? There's a staggering amount of visual and auditory information to keep track of, but no way to record it. Granted, taking notes as you play is a time honored technique, but why couldn't the game simply allow you to pick up a guidebook you find, for example, and take it with you for reference? Half of the puzzles require hours of trial and error, the exact *opposite* of good game design. The 3DO version exacerbates this — grabbing and moving all those sliders was bad enough with a mouse, and the 3DO control pad only makes it worse.



While the sheer graphic beauty of *Myst* is sure to impress, and has impressed thousands, game play and structure are problematic at best





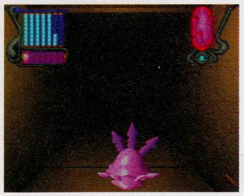
This musical note puzzle — not even a quarter of the way into the game — is a good example of obscurity for its own sake. The correct notes are written in a book located somewhere else which you can't take with you, the notes must be put in by ear, and the organ you use for reference is located on the other side of the room, four screens away. You can fake it by counting steps on the slider, but the 3DO control pad makes even this difficult

You could like *Myst* anyway just for being so luscious in appearance — this wouldn't be the first game where you're willing to put up with frustration just to marvel at what you get to see and hear next. However, the retro-zen approach wants to lead you to believe, at the same time, that it's all very mystical and deep, as if you were making a spiritual journey instead of just playing a game. But in the end, the game's total nonconclusion, really little more than a cynical set-up for an inevitable sequel, betrays that at *Myst*'s core, the game is simply being obtuse to hide what little lies beneath its glittering surface.

Rating: ★★

rating jaguar

no matter how deep you delve, and its brightly lit corridors reveal a total lack of atmosphere or any distinctive style. It's competent, but no better.
Rating: ★★



Nothing's more exciting than a really long hallway, at least, that's what *Seal of the Pharaoh* would have you believe

Space Hulk

Publisher: Electronic Arts
Developer: Games Workshop
Size: 1 CD-ROM
Release Date: June

Yet another game in the vast army of Id Software's *Doom*-style first-person games, *Space Hulk* manages to iron out a few interesting wrinkles in the maturing genre.

This is the 3DO version of last year's PC CD-ROM title, which in turn was based on Games Workshop's board game. *Space Hulk* is adrenaline-pumping, head-banging action at its most intense, as you work your way through a series of bizarre space stations, eradicating the mutated demons within its halls.

One new spin is that you actually command a squad of mech-armored troopers, so you've got someone to watch your back. Your teammates' incessant reporting "There's somethin' on the scanner, Captain!" can get a little annoying, but that's a minor quibble. This title looks great, moves well, and when a demon dies, it actually splatters the walls with its innards. Very cool.
Rating: ★★★★



Unlike many *Doom* clones, *Space Hulk*'s mutant demons even look impressive close up

Syndicate

Publisher: Electronic Arts
Developer: Bullfrog
Size: 1 CD-ROM
Release Date: Available now

There's been a version of this for nearly every system, and it has to be said this one takes a close second behind that found on PC.

The story is the same: Your evil criminal corporation tries to take over all the other evil criminal corporations, and you do this by sending in four-person squads to kidnap, brainwash, and/or assassinate whomever stands in your way. There are 50 territories to exert your evil influence over and, it must be said, this is easily the best looking and smoothest controlling version for any home system.
Rating: ★★★

Jaguar

Double Dragon V: The Shadow Falls

Publisher: Tradewest
Developer: Telegames
Size: 32 Mbits
Release Date: Available now

There are a couple of action game series that have tried branching out into fighting games. *Teenage Mutant Ninja Turtles* did it with some success — and then there was *Double Dragon*.

That game has a few new wrinkles, like being able to adjust the strength, speed, and other attributes of your character, but while the 12 characters in the game have some theoretically interesting designs, the art is flat and the animation is stilted at best. Some of the backgrounds have been redesigned to take advantage of the Jaguar's color palette, but the bottom line is that this wasn't that impressive when it was released for SNES and Genesis, and it's no more impressive now.
Rating: ★★



Unfortunately, *Double Dragon V* doesn't achieve what it sets out to do

Jaguar

VICTORY

Cannon Fodder

Publisher: Virgin Interactive
Developer: Sensible Software
Size: 162 Mbits
Release Date: Available now

Cool and controversial, this made a splash, in more ways than one, when it hit the Amiga in Europe and the PC in the US.

Cannon Fodder features roughly 10 times the bloodshed and is somewhat like Bullfrog's *Syndicate* although without complicated strategy. This is one wild ride; it pits your small squad against a nebulously-defined "them," enabling you to run across the countryside blasting anything that moves and blowing up anything that doesn't. Best of all, enemies scream and fall down in tiny, bloody smears, or even better, they lie there wounded — and keep screaming — until you finish 'em off (somehow, this still got a K-A rating, go figure).

Later missions let you commandeer enemy vehicles like tanks, choppers, and a nifty snowmobile called "skiddoo." Put simply, this is the best Jaguar game ever. Period.
Rating: ★★★★



The main additions to the Jaguar version are some cut scenes with oddly constructed soldiers



Take your little guys into the field of battle, then kill everything you see — simple, easy to remember, and more fun than a barrel of cheerleaders

Hover Strike

Publisher: Atari
Developer: Atari
Size: 32 Mbits
Release Date: Available now

In theory, *Hover Strike*, the newest title from Atari, has a lot going for it. As an assault and hovercraft simulator, the game constructs good, solid-sized planetary surfaces to run around on, and we do mean surfaces — uneven, rough, challenging, fun to grind on — with terrain to run around on and hide behind, all texture mapped, dark, and nasty.



Hope you like all those texture maps — you're going to be seeing them up close, and little else

The trouble is, your hovercraft turns out to be an unwieldy beast of sorts, and even when you finally get used to the incredible momentum of the thing, you still have trouble figuring out exactly where you're actually going and where you're aiming.

And then, bumping across the terrain is disorienting — the player's viewpoint aims straight ahead, so you're looking straight up or down as you careen over hills. And despite some interesting challenges, this is, unfortunately, a serious simulator misfire.

Rating: ★★

Troy Aikman Football

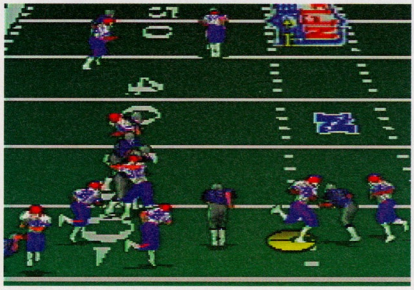
Publisher: Williams Entertainment
Developer: Telegames
Size: 32 Mbits
Release Date: Available now

So many elements in this game are handled extremely well: the title includes all NFL teams as well as logos, and more than 150 offensive and defensive plays from the NFL playbook, plus a few plays Aikman designed just for this game.

Also, *Troy Aikman Football* manages to capture a few subtleties about how fumbles, interceptions, and other nasty turnovers occur in the real world of football.

However, in terms of graphics, animation, and control, the title comes up short. The Jaguar version is better looking and smoother than previous versions for 16-bit consoles, but in the end, *Troy Aikman Football* is a better title for true NFL fans than for true videogame players. It's no "*Madden*-buster," some matter how you look at it.

Rating: ★★



Better graphics and animation as well as control would have put *Troy Aikman Football* at the top of the league. As it is, *Troy Aikman* is a better NFL collectable item than it is a game

32X

THROWBACK

Brutal

Publisher: Gametek
Developer: Gametek
Size: 16 Mbits
Release Date: Available now

Last year, Gametek released its first in-house project, *Brutal*, for the Sega CD. The game was easily one of the most innovative fighting games of the year. Now the company has tweaked the speed, moves, and characters to make this 32X version even more enjoyable than before.

The unique belt system (in which you learn moves as you go), fighting statistics, and all eight of the furry fighters are back for more *Brutal* fighting. New animation, a pumping techno soundtrack, and four additional characters — the Dali Llama, Karate Kroc, Psycho Kitty, Chung Poe — infuse enough fresh blood to make this new game really shine.





The Dali Llama, now a playable character, executes a smoke attack that is unbeatable

The only complaint with this, and all other *Brutal* games, is that you can use only one kick or punch repetitively and still win most fights. Other than that, this game has got it all: great graphics, sound, and 12 extremely unique fighters. If you already spent your hard-earned cash on a 32X, there's no doubts about this one, go buy it.

Rating: ★★★





New characters Psycho Kitty and Chung Poe add more variety, upping the total characters to 12 (top). The new battle mode uses a unique strategic angle: you maneuver your fighters on a map to set up the best match-up (left)

32X

Golf Magazine Presents 36 Great Holes Starring Fred Couples

Publisher: Sega
Developer: In-house
Size: 16 Mbits
Release Date: Available now

The 32X takes to the links with 36 holes, 15 syllables, and one of its few decent games. This game, it's name... err.

GMP36GHSFC...err. Golf Magazine Presents 36 great Holes Starring Fred Couples is a well-built golf simulation with all the usuals — replay, slices, hooks, swing meter — plus a couple extras. You can save an instant replay to memory, customize your golfers, and play in a tournament with as many as eight players on 36 of the toughest holes in golf.

On the down side, *Fred Couples Golf* is just another golf sim without the depth of EA's *PGA* series, and, to top it off, the graphics just aren't that impressive for a 32-bit game. The only thing here that hasn't been seen before is the massive 15 syllable title.

Rating: ★★★



In *Fred Couples Golf*, you can play with seven other players; and graphics are sharp, but where's the texture-mapping?



***Knuckles Chaotix* claims the most useless and officially stupid move of all time. Press a button and the power of the 32X is embarrassingly flaunted**

Knuckles Chaotix

Publisher: Sega
Developer: In-house
Size: 32 Mbits
Release Date: Available now

Like the villain in a B-horror movie who dies a thousand deaths but keeps coming back for one more, the side-scrolling platform game just keeps living.

This time around, Sega dumped *Sonic* altogether and gave the "much hipper" Knuckles a shot at carrying the 32X flag. What's the 32-bit improvement? It's a change in gameplay in which Knuckles works in tandem with one of five mascots (insects and rodents with cute names like Charmee Bee). The mascot holds Knuckles while he builds speed and tension, then unleashes him in a Sonic spin. Knuckles can also grab his cute companions, toss them to the next level, and pull himself up. You can use this "new" method of movement to whip Knuckles and his little buddies through five large and generally familiar levels.

The much too colorful backgrounds, unimpressive attempts at showing off, and tiring gameplay leave *Knuckles* as a great game — five years ago.

Rating: ★★

32X

SECONDARY

Quarterback Club

Publisher: Acclaim
Developer: Iguana
Size: 32 Mbits
Release Date: Available now

The folks at Acclaim are calling the Genesis and SNES versions of *Quarterback Club* the *Madden*-beater — a feat that neither accomplished. However, this 32X version is a vast improvement on its 16-bit counterpart.

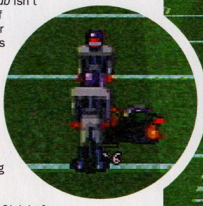
As a football game, *Quarterback Club* isn't great, but what it points to in the future of sports gaming is vital. You select from four camera angles, an auto camera that zooms in and out, a shoulder camera placing you right in the action, a medium range which is similar to Madden's view, and a blimp shot which is great for pass coverage and seeing downfield receivers. All the angles work well, but the graphics and smoothness of play aren't quite what you'd expect from a 32-bit product. The camera view option, giving you full access to the playing field, is the future in sports games.

The gameplay in 32X's *Quarterback Club* is far superior to its 16-bit counterparts, but the lack of a players license, and no individual statistics keep this game from being the groundbreaking title it may have been.

Rating: ★★★



The shoulder camera puts the wonderfully pixely 32X graphics right in your face, for up-close, hard-hitting action





The blimp camera pulls you up to the coaches box enabling the player to read zones and routes from a bird's eye point of view

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Mystery Word Grid

	H					
		E				
P	O	W	E	R	N	MYSTERY WORD
	R					
S						

WORD LIST and LETTER CODE chart

POWER N	PRESS K	BLAST A	WRECK P
BREAK Z	PUNCH S	SPRAY.....E	TURBO.....V
STOMP T	STAND H	PRESS.....C	DREAM.....I
CRUSH.....O	SCORE.....R	SLANT L	CHASE.....P

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PC

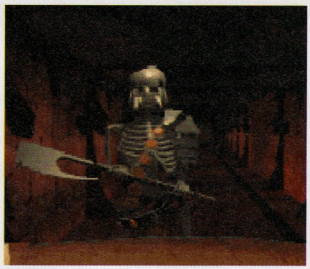
Bureau 13

Publisher: Gametek
Developer: Take 2 Software
Size: 1 CD-ROM
Release Date: Available now

Bureau 13 is a strange new strain in classic graphic adventures. The game revolves around the exploits of a government team in charge of investigating the supernatural.

In each mission you can choose which members you'd like to include; the characters range from a strange mix that includes a witch, a computer specialist, a priest, a thief, a vampire, and a beautiful girl in a robotic suit — not exactly suited for subtlety.

Play is handled in the old-school Sierra style, with the familiar point-and-click mouse control, and the grab-and-use approach to puzzle design. Although in some ways it's a bit basic compared to its competition, *Bureau 13* has enough originality to make it worth a second look.
Rating: ★★



Fight scenes are smooth and fast paced, and add a much needed punch to *Dragon Lore*'s puzzle fare

Dragon Lore

Publisher: Mindscape
Developer: Cryo
Size: 1 CD-ROM
Release Date: Available now

Mindscape, which is the company formerly known as Software Toolworks, blends some of the fastest moving rendered images yet on the PC with a wonderfully branching and absorbing plot in *Dragon Lore*.

Constructed as basically a *Myst*-style graphic adventure with an action-oriented fighting interface, *Dragon Lore*'s puzzles tend to be straight-forward problem-solving ones in the beginning. However, fortunately, this is a title that was well crafted and packs enough difficulty in the end for even the most demanding adventurer/gamer.

When players enter into a fighting situation, the situations drop into an *Arena* or *Ultima Underworld* fighting interface which helps break up the monotony that, in so many games, plagues this particular genre.

While *Dragon Lore* won't appeal to everyone in the gameplaying world, this title is perfect for the adventure fan who's looking for just a little bit more in a game.
Rating: ★★★

Hodj' 'n' Podj'

Publisher: Virgin
Developer: Boffo Games
Size: 1 CD-ROM
Release Date: Available now

Originally intended for release by the ill-fated MediaVision, Steve Mertezky's pet project *Hodj' 'n' Podj'* weathered the threat of becoming vaporware and found itself a safe haven in Virgin's stable.

What at first may look like a simple children's title, *Hodj' 'n' Podj'* is actually a collection of 19 titles ranging from simple arcade titles — from the golden age of video gaming — to more complex puzzles like cryptograms and word searches fully connected by a tongue-in-cheek fairy tale and a board game interface. Although the game won't

PC



Dealing with the local crime bosses can earn you some extra dough, but in the end, it may not be worth the risks involved

DEEPDISH

Pizza Tycoon

Publisher: Microprose
Developer: Cybernetic Corporation
Size: 10 MBs
Release Date: Available now

Microprose's newest title, *Pizza Tycoon*, is an entertaining and unique strategy game that should appeal to a wide swath of gamers.

Depending on the chosen starting level, players can start with a base amount of money that they must turn into a worldwide pizza empire by buying or leasing buildings in one of 10 major cities, creating a customer base, designing a specialty menu, and, of course, running a successful business.

The detail of the game is truly impressive, and forces players to deal with everything from bribing government officials, paying mob protection money, designing the interior of their parlors, and even hiring and paying a competent staff. Unfortunately, this same complexity can make learning the game a big chore for those with limited patience. Graphics are simple, but hold a tongue-in-cheek appeal that sets a humorous mood for the whole game. Not a game for die hard action fans, but a winner for just about everyone else.
Rating: ★★★★



Designing specialty pizzas is hard work, but if you hit a winner, you stand to make a lot of money (above). Players choose from 10 international cities, each with its tastes in pizza and decor (inset)

appeal to those hungry for action, it's a really good game for laid back fun on a rainy afternoon.
Rating: ★★★

Renegade

Publisher: SSI
Developer: Midnight Software
Size: 1 CD-ROM
Release Date: Available now

In the rush to produce a bigger and better *Wing Commander*, most companies have decided that expensive productions and effects are the pathway to success. SSI's *Renegade* (based of FASA's popular *Renegade Legion* RPG) is a brilliant exception to this rule.

Filled with slick, 3D fighter modeling and an intriguing — if predictable — storyline, this hot new title combines the best aspects of the fun and mindless shooter with great simulation-style interfacing.



This man spends much of his time screaming at the top of his lungs at you in *Renegade*

As the game progresses, an unexpected invasion by the loathsome TOGs puts you in charge of an outpost with, as usual, the fate of all humanity resting in your hands. And this is really more than just a space sim because *Renegade*'s strategic mission controls, well-detailed character development, and absorbing plot make this game a truly entertaining title in every sense of the word.
Rating: ★★★★

Rise of the Triad

Publisher: Apogee
Developer: Apogee
Size: 16 MBs
Release Date: Available now

The latest release to imitate the on-going *Doom* craze, Apogee's *Rise of the Triad*, while entertaining in many ways, just doesn't have the physical power to compete with the big boys.

A replica of *Doom* with the addition of a few cool powerups, like a god mode that actually turns you into a power-wielding deity — and the ability to pick up two pistols at the same time for John Woo-style bulletfests — the game has its own style but never strays far enough from the *Doom* herd to fully break free. It's great for those of you who still aren't tired of the original.
Rating: ★★★



Two guns are better than one for mowing down a crowd of soldiers in *Rise of the Triad*

PC ZZZZZZZ

Zorro

Publisher: Capstone
Developer: Capstone
Size: 1 CD-ROM
Release Date: Available now



From the company that brought gamers the *Beverly Hillbillies* videogame comes *Zorro*, a title that is presently being touted as a "cinematic action adventure."

The cinematic part is easy enough to find... annoying film clips pop up every few seconds to deliver what is supposed to pass as a plot in this game, causing the CD-ROM drive to deliver what will quickly become a hauntingly familiar delay time. The action part isn't quite as entertaining, and looks a lot like *Prince of Persia* as if pieced together during the Great Pixel Famine of 1982.



An animated cut scene that doesn't bog the computer down with FMV screens (inset). Most of your first jumping attempts will end with you learning to fly the hard way (above)

If you manage to get past the grainy screens, more joy awaits you in the uncontrollable gameplay. With keyboard or with joystick, players are forced to react to situations so far in advance that Nostradamus (even armed with a Magic Eight-Ball) would have had trouble making it through one of the levels.

Once players have gotten a grip on the controls, and consulted the Ouija board for playing instructions, they will be rewarded for their trouble by getting to relive the somewhat less than famous adventures of *Zorro*. Remember the episode where Zorro used his whip to fight off the man-eating plant? Unless you've got a fetish for black leather masks and whips, or you're an accredited psychic, we strongly recommend that you avoid this title like the plague.
Rating: ★

Shanghai: Great Moments

Publisher: Activision
Developer: Quicksilver Software Inc.
Size: 1 CD-ROM
Release Date: Available now

Shanghai: Great Moments is Activision's slick new remake of one of the best puzzle games ever. *Shanghai* is an all-Windows release that take full advantage of high-resolution graphics, nicely animation sequences, and a host of new play variations to make it one of the most playable brain-teasers of the year.

Title sets are amazingly detailed as each pair matched triggers a unique minimovie special to the title's theme. New features include Contemplation, a play variation combining *Shanghai* with the time-tickling memory challenges of *Concentration* (designed for those with the more efficient brain); tile sets that require matching a pair of famous lovers; and, of course, plenty of animal shaped layouts. Surely this game is destined to be a classic.
Rating: ★★★★

Transport Tycoon Scenario

Publisher: Microprose
Developer: Microprose
Size: 2 MBs
Release Date: Available now

For those addicted to Microprose's latest economic simulation, the new *Transport Tycoon Scenario* disk is an absolute must-buy title.

The add-on scenario takes only a few minutes to permanently



On Mars' surface, steel mills and railways look much different in *Transport Tycoon Scenario*

load onto the game, and adds the whole new world of Mars for players to explore and control. While the game basically remains the same, the bizarre landscape and new player icons make a refreshing change for those who've been spending hours in front of the game. Perhaps the most powerful aspect of the upgrade is the create terrain option. With this simple tool, players can choose the locations of rivers, trees, and resources and create their own maps. A solid upgrade for a great game.
Rating: ★★★

Macintosh

Flashback

Publisher: MacPlay
Developer: Delphine
Size: 6.5 MBs
Release Date: Available now

Reminiscent of *Total Recall*, *Flashback* utilizes the same sort of extremely smooth, rotoscoped animation and cinema-style story sequences which made *Out of This World* a hit for the Mac.

Players assume the role of a beleaguered Galactic Bureau of Investigation agent who's in search of his memory and is on the lam from aliens, robots, cops, assassins, and assorted galactic scum. Your man must flee through one satisfyingly complex plot and seven strange levels, including a jungle planet, a futuristic New Washington, a lethal Running Man-style game show, and more.

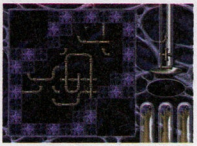
There's at least a good 40-hour work week's worth of gameplay here, and that's only if you're not the obsessive type. More of these, please.
Rating: ★★★★

Troubled Souls

Publisher: MacSoft
Developer: Varcom Systems
Size: 2 MBs
Release Date: Available now

This gothic arcade game could alternately have been titled *Disturbed Designers*. A *Tetris*-esque piece of compelling weirdness, Troubled Souls is a hell of a lot more involved than it first appears.

To save an alchemist's "troubled soul" players must create loops out of falling pieces of piping, tubing and — sure, why not — body parts. The obsession starts when you start to realize that the term "loops" is a fairly open one, and that you can temporarily swap pieces cluttering up the playfield



Just when you've cleaned things up, the playfield of *Troubled Souls* becomes more crowded

with new ones already piling up in the ready-tube, a feature many *Tetris* heads would have killed for a few years ago.

With gorgeously bleak H.R. Giger/H.P. Lovecraft-style graphics, nicely gross pulsating hearts for continue markers, and an eerie background melody straddling the line between "The Twilight Zone" theme and the soundtrack from the movie *Phantasm*, this is one title every CRT zombie will enjoy.
Rating: ★★★

Wolfenstein 3-D

Publisher: MacPlay
Developer: Id Software
Size: 3.3 MBs
Release Date: Available now

If you liked *Doom*, you'll like this point-of-view corridor crawler, "rated PC-13 for profound carnage." Of course, if *Doom* bored you silly, this one will, too.

Trapped in the depths of the Nazi POW camp Castle Wolfenstein, you must run, dodge, and kill your way out of 90 levels



***Wolfenstein 3-D*'s sharp images are a vast improvement over the original PC release**

Macintosh

HAUNTING

Alone in the Dark

Publisher: MacPlay
Developer: Infograms
Size: 6.9 MBs
Release Date: Available now

Alone in the Dark is finally, finally available for the Macintosh. Eerie, flowing movement and less-is-more polygonal simplicity make this Lovecraft-inspired game all the more creepy. (Shame on MacPlay for taking H.P.'s name off the packaging!)

You take the role of a two-fisted 1920s investigator who explores the haunted halls and subterranean catacombs of the doomed Derceto mansion, probing into a relative's mysterious death. Weapons, freaky sound effects, and horrible deaths abound, while plain, old deduction and a hefty dose of careful inquiry into rotting, Lovecraftian tomes keep the game from degenerating into a bug hunt.

Corner-of-the-room "camera angles" keep the feel cinematic and the mood uneasy. This is definitely one for which you should turn out the lights and turn up the speakers. A breakthrough game and a must-have for Cthulhu Mythos enthusiasts.
Rating: ★★★★



These smoothly animated polygon characters are a breakthrough in graphic design (inset). Every strange object in this house is a potential threat (right)

rating sega cd genesis

filled with guards, killer dogs (German Shepherds, presumably), SS troops, twisted Nazi doctors, twisted Nazi genetic experiments (nice touch!), and Der Führer himself, Adolph Hitler. Along the way you'll collect medkits, SS officers' meals, better weapons, dog food (no kidding), and the ill-gotten Nazi booty of stolen religious artifacts secreted throughout the castle.
Repeat: Castle Wolfenstein is *Doom* with Swastikas, so there isn't a staggering amount of freshness here, but the action is fast, deadly, and (surprise) addictive... and besides, it's hard to go too wrong with shooting up a POW camp full of Nazis.
Rating: ★★★

Sega CD

Flink

Publisher: Vic Tokai
Developer: Psygnosis
Size: 1 CD-ROM
Release Date: Available now

This is a cute side-scrolling action game like so many you've seen before. The titular, little wizard, Flink, kills enemies by jumping on



Flink doesn't have many new tricks up his sleeve, but what he's got will keep you interested

their heads or by throwing rocks at them (something wizards are well known for), and something Mario has been doing for, oh, just about 10 years. But his system of finding magic scrolls, and chasing down the components for the spells — literally at times — then finding the right spots to use them, puts an interesting spin on things, and we have to admit the game, on the whole, is challenging as well.

Flink comes perilously close to being so average it makes your brain begin to bleed, but the game still comes up with enough inventive touches, details, and sharp, colorful graphics so that, in the final outcome, the positives outweigh the negatives.
Rating: ★★★

Rapid Deployment Force: Global Conflict

Publisher: Absolute Entertainment
Developer: Absolute Entertainment
Size: 1 CD-ROM
Release Date: Available now

Rapid Deployment Force: Global Conflict is an M-1 simulator, though it's more like a colored version of *Battletank* for the SNES.

The graphics are fair, and it moves smoothly, but there's not much here to pop it above average, all the way down to the vague "terrorists taking over the world" story line. Parts of it are ridiculous: Hind helicopters refuse to die even when slammed with a couple of 120mm rounds, but that's OK, because your tank can fire them as fast as you can hit the button. The digitized cut scenes are among the most pixilated we've ever seen, and on the whole, the levels themselves are dull and mildly frustrating.
Rating: ★★

Road Rash

Publisher: Electronic Arts
Developer: Electronic Arts
Size: 1 CD-ROM
Release Date: Available now

You could look at this as an enhanced version of EA's *Road Rash* series for the Genesis, but in reality, it's a scaled down version of *Road Rash* for 3DO — and it shows. Although it includes the digitized cut scenes, the killer Soundgarden soundtrack, and the oddly disturbing character graphics, the races themselves lack the texture-mapped countryside and smooth flow of the 3DO version.

This would be OK, given it's on Sega CD, but the courses are incredibly sparse by any measure — the "city" consists of a handful of squat buildings resembling childrens' building blocks that dot the landscape — and it doesn't even move as smoothly as *Road Rash 3* for Genesis. It's not awful, but it's not as good as we'd expect from the series.
Rating: ★★★



If this collection of children's blocks is your idea of a city, then this game is for you

Sega CD

DAZZLING

Shining Force CD

Publisher: Sega
Developer: Sega
Size: 1 CD-ROM
Release Date: Available now

If you've owned a Genesis for long, you're probably already very familiar with the *Shining Force* series. In this newest CD incarnation, players take on an evil wizard and an entire land of evil creatures in an effort to save their queen.

More than just a quick CD remake of the original, *Shining Force*, the CD, is an entirely new story featuring the children of the original cast. While the game never really stretches outside of the basic gameplay of the first title, there are plenty of new monsters, storylines, and spells to keep fans from feeling like they've seen everything before. Battles are long but not boring, the fighting sequences are smooth and well-detailed, and the exploration quality of the game has kept its allure through its various translations. If you've got a Sega CD, you really want to own this game.
Rating: ★★★★





Not everyone has faith in the abilities of the new team (top). As usual, most of your game will be combat oriented (inset). Graphics are nice looking but are identical to those in the original (left)

Genesis

ATP Tennis

Publisher: Sega
Developer: Sega
Size: 16 Mbits
Release Date: Available now

One of the most playable tennis games ever was on the Intellivision, and since that point in the '70s, every tennis game has played the same way, with the addition of better graphics.

However, Sega Sports is hoping to change all that with its own in-house creation, *ATP Tennis*. The usual *Pong* feel of previous tennis games is still all here, but the ability to lob a pass, drill a passing shot, cut the ball, and nail 100 mph serves on the chalk, makes this absolutely the best Genesis tennis product to date. And to boot, the challenging and competitive artificial intelligence makes actually winning a tournament nearly impossible, and is sure to keep you coming back for many more shots.

Easy to play and filled with strategy, *ATP Tennis* is just slightly better than previous tennis games, but it's still better.
Rating: ★★★★

Barkley: Shut Up And Jam 2

Publisher: Accolade
Developer:
Size: 24 MBs
Release Date: Available now

Fans of the original *Barkley Shut Up And Jam* (were there any?), will be glad to see Accolade has added more than 2,000 pieces of animation, 25 jams, 22 characters, 8 outdoor courts, secret codes, and stats that you can save. All this makes *Barkely 2* far superior to the first effort, which was awful.

You can toss alley-oops, fire behind-the-back passes, and shatter the backboard. But despite how much this game tries, it just doesn't capture basketball or streetball particularly well. As for the license, we have a feeling that the only thing Charles Barkley did for this game is say, "You put the rock in the hole," then he collected a big, fat check, and left the apparently clueless developers to make this tragic game.
Rating: ★

Saturday Night Slammasters

Publisher: Capcom
Developer: In-house
Size: 32 Mbits
Release Date: Available now

Step into the ring as any one of 10 beefy wrestlers and pull off attacks like Rasta's Dread Lock Drop, Haggar's Spinning Piledriver, and Stingray's Jalapeno Comet. Or, for a different twist, step out of the ring and take on your opponent with tables, chairs, and beer bottles.

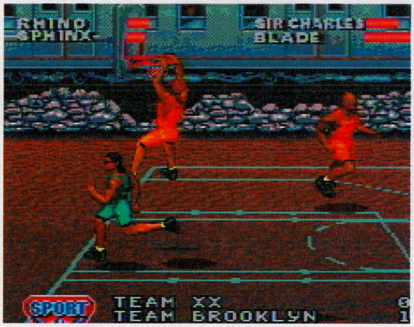
Any way you go, *Saturday Night Slammasters* isn't anything new. The graphics and sound are generic and bland, the fighting and range of characters have been seen before and done better. The barbed-wire ring of the Death Match does add minor excitement, saving the game from being horrible. However, wrestling fans would do much better to pin down a copy of *WWF Raw* and forget about this game.
Rating: ★★

Spider-Man the Animated Series

Publisher: Acclaim
Developer: LJN
Size: 16 Mbits
Release Date: Available now

New York city is on the verge of blah, blah, blah. And only (fill in hero name here) can save it from the evil villain (fill in villain name here). The point here is that *Spider-Man* follows in a long line of games that are exactly the same with a few costume changes.

Spidey will have to foil the likes of Dr. Octopus, Alistair Smythe, Jack O'Lantern, and The Lizard, as he swings through six levels of New York in order to return evil to it's place — in an insane asylum. But who really gives a damn? The graphics, sound, story, and the whole game are so horribly familiar and boring that this game isn't even worthy of the one star we give it.
Rating: ★



Put up or shut up is another streetball term that the makers of this game should've paid more attention, to in *Barkley: Shut Up And Jam 2*



Make your own *Spider-Man* game. Substitute any hero and give him one special skill, it's that easy

Sega Genesis

HONEST

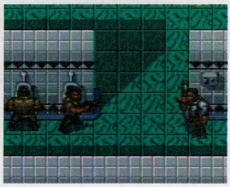
True Lies

Publisher: Acclaim
Developer: Beam Software
Size: 16 Mbits
Release Date: Available now

Finally, the folks at Acclaim got one right. They took a movie license and actually made a game that is fun to play, congratulations. *True Lies* is played from a refreshing overhead perspective enabling little Arnold the ability to move around in a non-linear, *Zelda*-ish fashion.

You must complete each mission and then escape from the onslaught of armed enemies. Along the way you can pick up a shotgun, Uzi, and grenades to make the death of the enemy faster and more enjoyable. Traveling through levels like the mall have you fighting hordes of enemies while shoppers just mind their own business. If you accidentally, or perhaps on purpose, shoot three civilians, the mission ends. Add an occasionally funny comment from Tom Arnold and the game is just like the movie, except there is no trace of the buoyant Jamie Lee Curtis (we'll try to forgive).

Basically, *True Lies* is *Doom* from an overhead perspective — not incredibly original or pretty, just surprisingly fun.
Rating: ★★★



Friend or foe? Decide quickly before they turn their guns on you





Shotgun blasts knock enemies back into pools of their own evil blood (far right)

Tecmo Super Hockey

Publisher: Tecmo
Developer: In-house
Size: 16 Mbits
Release Date: Available now

The entire hockey genre has moved to the superior vertical view, but that didn't stop *Tecmo* from creating this horizontal dinosaur. The horizontal drawback is the necessary reduction of player size to show a large enough portion of the ice to make good decisions. Other than the perspective, *Tecmo Super Hockey* is a clone of the others, complete with preseason, season, and all-star game modes, season stats, and the real players.

On the ice, simple passing and shooting controls make this a decent arcade style cartridge with just a hint of sim (stats). However, *Tecmo Super Hockey* winds up with the rest of the wanna-bes, who



***Tecmo Super Hockey* has great fights. But the tiny characters aren't exactly intimidating**

Sega Genesis

TRICKY

Minnesota Fats The Pool Master

Publisher: Data East
Developer: Data East
Size: 8 Mbits
Release Date: Available now

The sequel to *Side Pocket*, *Pool Master* has built upon the best Genesis pool game by adding an slough of features. Choosing from the story mode enables you to take on various sharks in order to play the ultimate battle with the Fat Man; you can play in a tournament, against a friend (or two), and play an expanded trick game. But the most noteworthy addition is the ability to play eight-ball, the staple of any pool game that was mysteriously absent in the original.

The new cue-ball shaped cursor provides for more accurate shooting and the opening breaks are much more realistic. The computer opponent makes miraculous shots and misses easy ones, but still makes a worthy opponent.

The ability to play eight-ball, nine-ball, one-pocket, rotation, 14.1, continuous, three-ball, and cut-throat, make this easily the best pool game for a home system — though it still can't beat a smokey bar.
Rating: ★★★



Finally a decent game of eight-ball for the home system. The trick shot game features a slough of tough and impressive shots that require all your wits (bottom right)

would be lucky to lace the skates of EA's phenomenal *NHL '95*.
Rating: ★★

Warlock

Publisher: Acclaim
Developer: Trimark Interactive
Size: 16 Mbits
Release Date: Available now

With *Warlock*, Acclaim manages to suck all life from a bad movie and further demonstrate the uselessness of the side-scrolling game. Every trite level brings you face to face with the likes of undead, animated statues, ghostly monks, and the dark Warlock himself. Oh, and here's a new one — as you run from left to right you can pick up healing magic potions and one-ups.

Some of the backgrounds are well shaded, and the accompanying music is a touch on the eerie side, but all this game does to is prove that bad movies make horrible side-scrolling action games.
Rating: ★



Does *Warlock* look vaguely familiar?

Exo-Squad

Publisher: Playmates
Developer: Novotrade
Size: 8 Mbit
Release Date: July 1

This game is based on the comic book and Saturday morning cartoon series of the same title, and let's hope whomever owns the license got their money's worth because once this game is associated with *Exo-Squad*, that property won't be worth squat.

A combination shooter and fighting game, *Exo-Squad* uses separate sprites for each segment of its cyber-characters, making for gangly, unwieldy movement. The control system, especially during the fighting segments, is so poor your character is often reduced to merely standing in place and wiggling as you desperately try to figure out what magical combination will actually pull off the move you're thinking of. Unacceptable and bad.
Rating: ★

SNES

Fatal Fury Special

Publisher: Takara
Developer: SNK
Size: 32 Mbits
Release Date: Available now

The *Fatal Fury* series has its devotees. But while the games are technically competent, they don't add much to the fighting game category — and never really have — except for the series' signature, proto-3D ability to move from the foreground line of action to one in the background.

But let's face it, sprite-based 2D fighting games are a dime a dozen, and in spite of the impressive Dolby Surround, all this one really has going for it is sheer size: 15 characters (all the characters from previous game in the series), and five special moves apiece, some of which are slick, but none of which you haven't pulled off in some other game of its ilk. *Fatal Fury Special* is too little, too late.
Rating: ★★



***Fatal Fury Special* really isn't that special — though it's a decent enough series, this title is nothing to get terribly excited about**

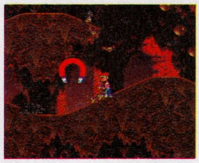
Hagane

Publisher: Hudson Soft
Developer: Red
Size: 16 Mbits
Release: Date Available now

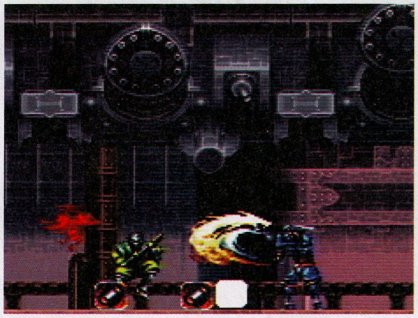
Hagane is a side-scrolling action game starring a cybernetic Ninja that bears more than passing resemblance to Sega's *Shinobi* for the Genesis.

The best way to describe this game is "dense." While there's not much here that's terribly original (although there is one amazingly challenging stage where you run — from right to left for a change — jumping over tiny enemies and pick them up to throw at other tiny enemies. *Mighty Max is* awful and no fun.

Rating: ★



If anyone recognizes this small boy (*Mighty Max*?), let us in on it



Although this bares a striking resemblance to *Shinobi*, Hagane's main assets are solid level construction and impressive, detailed graphics

Mighty Max

Publisher: Ocean
Developer: Ocean
Size: 8 Mbits
Release Date: Available now

A side-scrolling action game based on a cartoon series none of us had ever heard of, *Mighty Max* combines lackluster, almost primitive graphics, obscure goals, and control that can best be described as "peculiar" for a game that is just mediocre.

The sheer height of this game's creativity is that some stages have as much as three (count 'em, three) layers of scrolling in the background, and our tiny hero, Max, can stun his chasms while the ground crumbles beneath you), the graphics are suitably dark, well-detailed and shaded; the enemies are plentiful and varied; and the hero has no less than five different weapons, as well as a plethora of special attacks. In short, *Hagane* is well-crafted and cool.

Rating: ★★★



If it moves, shoot it. Oh, and just in case you're wondering, in *Operation Thunderbolt*, the tell-tale expression shows your character has been hit

Operation Thunderbolt

Publisher: Taito
Developer: Taito
Size: 12 Mbits
Release: Available now

This is another shooting-gallery game, just like *Operation Wolf*.

But *Operation Thunderbolt* is mildly interesting for a couple of reasons: the game is SNES mouse-compatible, but doesn't support any light guns. You can choose from six different characters which all perform exactly the same.

Otherwise, this is the same no-brainer, shoot-anything-that-moves title you're used to. It's good for a mild adrenaline rush — barely — but that's it.

Rating: ★★

Pac-In-Time

Publisher: Namco
Developer: Kalisto
Size: 8 Mbits
Release Date: Available now

After taking a radically different approach for *Pac Man 2: The New*

SNES

BLOCKHEADED

Breakthrough

Publisher: Spectrum Holobyte
Developer: Zoo Corporation
Size: 8 Mbit
Release Date: Available now



Here's the deal with *Breakthrough*: tap on groups of blocks and you'll make them disappear, then watch what's left fall into the empty space. It's simple, but dull

Strangely, this game is *Tetris* in reverse: You begin with a full wall, and by tapping the button on groups of same colored blocks, they disappear, allowing the blocks above to drop down and line up new groups.

In an attempt to add a little variety, other objects drop into the field too, like soda cans, spiders, and dynamite. These hinder or help the player in various ways, but only serve to complicate things without adding much to game play. Alexy Pajitnov designed this, and while we have all the respect in the world for the creator of *Tetris*, hey, we've seen it, OK?

It makes you wonder whether, in designing the same game again and again, he's trying to stick to his successes, or whether he's a one-trick pony and can't do anything else. As puzzle games go, this is OK, but we've seen too many like it, and better.

Rating: ★★

SNES

PARCHED



Remember the part of *Stargate* where Kurt Russell ran from left to right and shot at giant desert bugs? Us neither. Can we do something different with movie tie-ins, please?

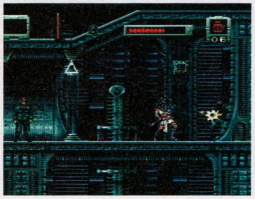
Stargate

Publisher: Acclaim
Developer: Probe
Size: 16 Mbits
Release Date: Available now

Stargate is standard side-scrolling fare, but we at **NEXT Generation** give it a mild nod thanks mostly to the game's impressively smooth character animation.

Actually, this should come as no surprise — last year Acclaim and Probe released *Alien III*, another movie tie-in that boasted impressive animation and tiny chugging machine guns, and Acclaim has received a lot of attention from its Motion Capture Studio in the past.

However, while the game isn't bad — its 10 levels are solidly, if not imaginatively, designed. And there are a few surprises to break up the constant action — the title has little to do with which the film is based.





As far as the game is structured, you could plunk practically any character down into it, change a few sprites, and it would fit a lot of other films. We're getting the impression that if, say, *Prince of Tides* were released for SNES, it would feature Nick Nolte running from left to right punching and shooting escaped convicts. FIND A NEW STRUCTURE.
Rating: ★★★

***Stargate* does offer some variety, however: a few levels feature some low-grade flying action in various deserts and towns**



Yup, it's that little round guy, *Pac-Man*, again, and this time you can actually control his actions with smooth play mechanics

Adventures, Namco has fallen back on a more traditional, more comfortable action format.

There is a lot to like here: the graphics are very slick, and play mechanics are different than you might be used to but are still intuitive enough so you get the feel of it after a short while.

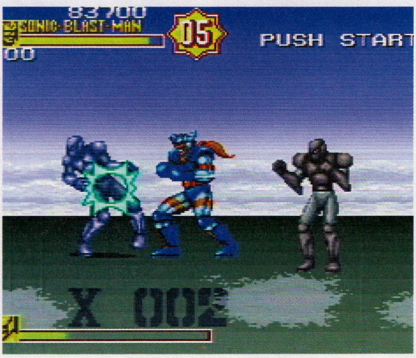
Pac-Man has a lot of skills, including a rope to swing on, breathing fire, and hitting things with hammers, which makes the levels more like action puzzles than anything else. The only downside is that while the levels get progressively more difficult, they don't vary much.
Rating: ★★★

Sonic Blastman II

Publisher: Taito
Developer: Taito
Size: 12 Mbits
Release Date: Available now

The original arcade version of *Sonic Blastman* was unique: the machine featured a pad on it you would actually punch — with your fist — trying to smash trains and robots before they could reach their hapless victims.

Sonic Blastman for SNES chucked that idea in favor of a side-scrolling, *Final Fight*-style game, that was, at least, garish, goofy, and enjoyable on its own



See here how Sonic Blastman goes the Dark Knight route, and loses what little appeal he had to start with in the beginning

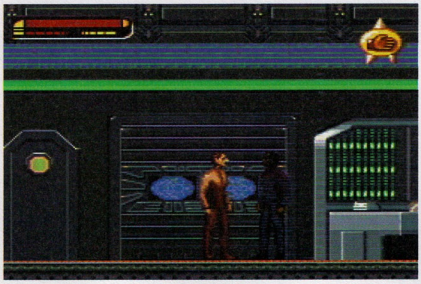
terms. This sequel gets rid of even that primary-color appeal. The graphics are shaded and dark, and the characters are smaller as well. It's not a rotten game, but there's nothing here to make you sit up and take notice.
Rating: ★★

Star Trek Deep Space Nine: Crossroads of Time

Publisher: Playmates
Developer: Novotrade
Size: 12 Mbits
Release Date: July 1

Deep Space Nine is an action/graphic adventure that comes very close to being good. The characters from the TV show talk and behave a great deal like you'd expect them to, and the mystery of the Bajorans and Cardassians (who are at it again, to start with) — among others is intriguing at least.

On the other hand, things take a good while to get going, and much of the time it's not exactly clear what your next move should be. The graphics are muddy and uninteresting — it's rarely clear even where potential doorways are in the background — and watching Commander Sisko's somewhat stiff-armed punching technique is mostly good for laughs. Recommended only for undiscriminating fans.
Rating: ★★



Oh, poor *Deep Space Nine*, your long-awaited game will have to wait awhile longer because *Crossroads of Time* just ain't it

SORRY!

No new games were made available for review this month on the following systems

CD-i

Neo-Geo

Arcade

ECLIPSING

Night Warriors: Darkstalkers Revenge

Publisher: Capcom
Developer: Capcom
Size: One or two player standup
Release Date: Available now

Another fighting game from Capcom may not be worth getting excited about, and the idea of a sequel fighter with only two new characters may appeal even less, but even the most jaded gamers will want to take a close look at the new *Night Warriors: Darkstalker's Revenge.*

Gamers now get another chance to play as their favorite antiheroes from *Darkstalkers*, and as the two bosses from that game, Pyron and Huitzil. The two new characters, Hsien-Ko, a Chinese ghost fighting to save her mother's soul, and Donovan, a mysterious man seeking to destroy the evil of the Darkstalkers for good.

Graphics throughout the game have been dramatically improved, and loads of new special moves for all of the characters insure that the title is a game on it's own, not a stale remake of the original. The game highlights a new power gauge system which is in many ways similar to that of the *X-men* coin-op, and when charged, enables players to unleash with a host of astounding new "supermoves." The addition of these new power moves not only gives the programming team another place to show of its artistic skills, as in Donovan's fearful "Foot of God" attack, but also adds a new strategic element to the game as players try and decide when to cut loose with the precious charges.

Night Warriors doesn't break new ground, but the bottom line here is that it is done really well — and it's a great way to get rid of some of those pesky quarters.
Rating: ★★★★





Hsien-Ko's ability to reflect missile attacks is devastating (inset). Donovan's special attack calls a god to stomp on the offending foe (left)



With two new characters and the ability to pick bosses, *Night Warriors: Darkstalkers Revenge* proves an excellent sequel (left)

corresponding

Just go on and send it! Write to us and tell the world how you feel, think, see the changes that are going on around you. Don't be shy, contact us. Our address is **NEXT Generation** letters, 1350 Old Bayshore Highway, Suite 210, Burlingame, CA, 94010. E-mail us at ngonline@aol.com. Fax us at (415) 696-1678



Compliments, complaints, criticism, correspondence, confessions

I must say I'm a little confused over all the tither concerning the new 32- and 64-bit machines. Not as in "Which is better, the PlayStation or Saturn?" But, which is most worth the price? I recently talked to the store manager at Babbage's and he said that the company doesn't plan to carry the PlayStation!

He said that the big wigs at Babbage's distributing decided that since Sony is a new competitor in the ballpark, the company would not carry a system that will probably become obsolete. I think this is a very bad choice by Babbage's. First of all, they carried the Jaguar — and still do — right? Enough said. All I'm trying to say is that after looking at all the great software for the PlayStation, that they should at least be willing to give it a chance.

On other things, I must say I really enjoy your magazine. It is laid out extremely well and is the best gaming magazine out on the market right now. I also like your rating system that you have chosen to use. It makes a lot more sense to give one positive score instead of five in-between ones. I can count on **NEXT Generation** to give me in-depth interviews and only the facts, not a bunch of rumors or info about *Mortal Kombat 3* that I have already seen too many times.

Well, thank you for your time and I look forward to the next issue of **NEXT Generation**. I would appreciate it very much if you responded.

Douglas M.Currier

It looks like you may have received some bad information Douglas. Jill Wilhite, vice president of merchandising for NeoStar, the company that represents both Babbage's and Software Etc. told **NEXT Generation** that, "We are planning on carrying the Sony PlayStation and all of the next generation systems." She went on to say that the company "is very excited about the new platforms that are coming out." As to which system is going to be the best value, it's still too soon to tell. Both the Saturn and the PlayStation have shown off some excellent titles so far, and by the look of things, the Ultra 64 and the M2 are going to be making some waves as well.

Keep an eye on future issues of **NEXT Generation** to stay on top of the latest developments in what promises to be an exciting year.

Well, if you don't mind, I would like to ask what could be a stupid (if not already overasked) question. With compatibility problems in the past between Japanese machines and North American games — at least cartridge wise — will the bridge be paved over? Or will this problem continue even with CDs? In other words, if a person were to purchase a Japanese Saturn or PlayStation, would they be able to play the games for it that are released here? The can't-wait-even-five-months crowd, like myself, are chomping at the bit (no pun intended) for the new units. I'm asking, is it worth importing?

David Harvey

David, We received many questions similar to yours. See the response following the next letter in regard to your question.

I just finished reading **NG 4** cover to cover. Thanks for another great issue! It is nice to see in depth interviews with some of the leading people in the industry not just little snippets of a quote like other magazines.

After reading the Corresponding section, I have concern about a comment that was made to you in response to a letter. In answering Minh L. Nguyen's letter you said that the only way for people in North America can get either the Saturn or PlayStation is by importing from Japan. A phone number was then given to call if readers want more information on obtaining an imported console. I do not claim to be an expert or all knowing but it is my understanding that the North American versions of these machines will have software lockout devices that prevent Asian machines from being able to run North American software and vice versa.

Do you have any information pertaining to whether this will be true or not? I understand that many people are anxious to get one of these systems but by buying now and not waiting until September 2 (for Saturn) could be a mistake in the long run.

Joe Lawson

According to Andrea Vissalo, the public relations manager at Sony, the answer to the international compatibility questions is a resounding, "No." The choice to ensure that US software won't work with Japanese hardware is by no means a unique one either. Sega has already announced that its Saturn will offer a similar problem to those looking to do early importing. Vissallo went on to say that the decision to keep the markets separate is one of a marketing nature, and has nothing to do with any differences in the actual hardware. So as it stands, your only choices right now are to wait a few months, or to buy the whole system again.

I'd like to start by saying that over all **NEXT Generation** is an excellent magazine. But I have a few questions. First, why no tips or secrets? Are you ever going to post any? If not, could you recommend another magazine that does? I have an IBM PC (soon to have a CD-ROM) and an Atari Jaguar, but I play most of my games on the Jag. Second, is that a cartridge slot I see on the back of the Sega Saturn? If so, is Saturn going to play 32X games or only Saturn games?

Thanks for your time.
Loyal subscriber,
Robert Anderson

NEXT Generation is a magazine devoted to delivering detailed news coverage on the industry's leading edge hardware and software to the hard-core gamer. For the best in strategies and detailed reviews of PC software, we recommend you take a look at *PC Gamer*, and if you're looking for Jaguar hints, try out the Cheat Sheets section in *Game Players* magazine.

The port you're looking at on the rear of the Saturn was actually designed to hold memory cartridges for saving games. There are currently no plans for the Saturn to provide support for any of Sega's previous game systems.

dispatches

Letters from desks on the front line



Julian Rignal, Virgin Interactive Entertainment's director of product acquisition, offers his personal perspective on what 1995's changes mean for game players, and game makers, everywhere.

Something's rotten in the state of electronic gaming. The industry, which seemed destined to ride an unstoppable sales tidal wave, is now worried about crashing on the jagged rocks of the Chapter 11 section of the bankruptcy act. As recently as a year ago, it was impossible to read a dark story about electronic gaming. Pundits touted computers and videogames as the growth industry at a time when the US seemed to have a few others. The hardware and software manufacturers were the great hope of tomorrow for videogames.

Today, with 16 bit software sales as flat as a pancake, software ending up in bargain bins just weeks after release and videogame publishers around the globe tightening their belts, I thought the above quote was apt. What's weird, though, is that it was taken from a feature written by David Lustig published in March 1984 edition of *Electronic Games*. Fortunately, things haven't gotten quite as bad as they were when the article was published. Then the industry was looking back at a previous 12 months during which Atari had sprung a $500 million leak. Mattel's Electronic division had found itself $195 million in the red and even Activision, the top software manufacturer at the time, had posted a loss of $3 million. But that's not the issue. What I want to know is why does an article written 11 years and several technogenerations ago look as though it were written yesterday? Why does videogame history repeat itself like it did when the 30 million unit 8-bit market place collapsed at the beginning of the 1990s? Why indeed?

Well, let's think. When new videogame systems appear on the scene, better graphics, improved sound, and bigger cartridge memories than ever before mean that every month something new, exciting, and desirable gets released. Which gives the gameplaying public a reason to part with their hard-earned dollars. However, every evolutionary leap forward for software is one step closer to reaching the maximum capabilities of the system its designed for. After a relatively short time — usually only a few years — those machines become maxxed out. And despite clever licenses, huge marketing campaigns, and extra widgets and chips to push the machines even further, there's no getting away from the fact that when new software no longer offers anything significantly innovative and exciting to justify its high price, consumers stop buying games. That's happened twice before, and its happening now.

And hurrah! That's what I say! Every damn time.

As painful as it is for the industry and the many individuals who suffer the consequences of a boomed and busted economy, it can ultimately only be a Good Thing. I'm a hard-core gamer. I love games, but right now there's little for me to get excited about. The games I've played over the last few months are only marginally better than the games 18 months ago. *Donkey Kong Country*, the biggest and best 16 bit technology-fest yet seen with its simply astonishing quality and volume of super-high quality graphics, ultimately doesn't play as well as *Super Mario Bros. IV* or *Super Metroid*. The splendid *Earthworm Jim* sports some of the greatest animation and production values seen on 16 bit, yet its gameplay is all too familiar. Even the latest games in EA's Sports series, brilliant as ever, are nevertheless only slightly better than their forebears.

The fact of the matter is that we've seen the best days of the 16 bit marketplace and the shakeout knell is about to toll. It's the inevitable result of consumer demand — or rather, the lack of it. The companies who have produced the games that nobody wanted — usually the sort that have the emphasis on license over quality gameplay — will disappear and the survivors will be forced to go back to the drawing board and start over using the next Big Thing. In this case, the various forthcoming 32 bit super consoles from across the globe.

"the Sony PlayStation is already looking tastier than a honey-dipped Cindy Crawford (or Brad Pitt, he said adding an air of political correctness to the proceedings)"

And so history begins to repeat itself, and for gamers, that is nothing but good news.

Already the first generation of the next generation of machines are here. Atari's Jaguar is undoubtedly an awesome system, but sadly the software currently available for it doesn't yet fully exploit its blistering technology and so far there are no must-have games in its software range (although all it would take is a couple more games like *Tempest 2000* and I'd be out there, wallet in hand).

Pointing the way forward right now is 3DO, Sega's Saturn, and Sony's fine PlayStation.

After an inauspiciously start, 3DO is gathering momentum. And why not? I must admit I was on a one-way ticket to skeptic central until 3DO *Road Rash* came along. That, for me, was a watershed — a superbly tuned and highly playable videogame on 3DO? Incredible! *FIFA Soccer* turned up weeks later, and had it featured fine playability of the Genesis '95 version (and had all the different teams), I'd have definitely bought a 3DO right there and then. And even though Virgin Interactive Entertainment's very own *Demolition Man* showed that movie and videogame elements could be blurred together seamlessly in a way that was unachievable on 16 bit, it was the astonishing Need for Speed (play it using the first person viewpoint — the other perspectives feel much slower and nowhere as near as fun or as realistic) — that convinced me that 3DO was, for the time being at least, the one to have.

But looming large on the western horizon with millions of dollars marketing support ready, not so much to rain, but pour on 3DO's parade are the Japanese 32-bit knights in shining armor.

While Sega's Saturn needs a few more home-grown killer games — which aren't as far away as some think — before I'm truly convinced, the Sony PlayStation is already looking tastier than a honey-dipped Cindy Crawford (or Brad Pitt, he said adding an air of political correctness to the proceedings) and the ultra 64 could be a truly astonishing system.

So who will win this time? To be honest, I couldn't give a flying fork! Winners. Schwinners. Losers. Schmoosers. There will always be great games out there. Hardware and software manufacturers will come and go and history will repeat itself again and again. The one who survives and wins every time, the one who makes the industry live and die, the one who has the industry by the balls, and knows when to squeeze tight, is you and me — the gamer.

Julian Rignal, March 1995

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* Must have PC / Windows / DOS and/or MAC exp.
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* Avid game player a plus

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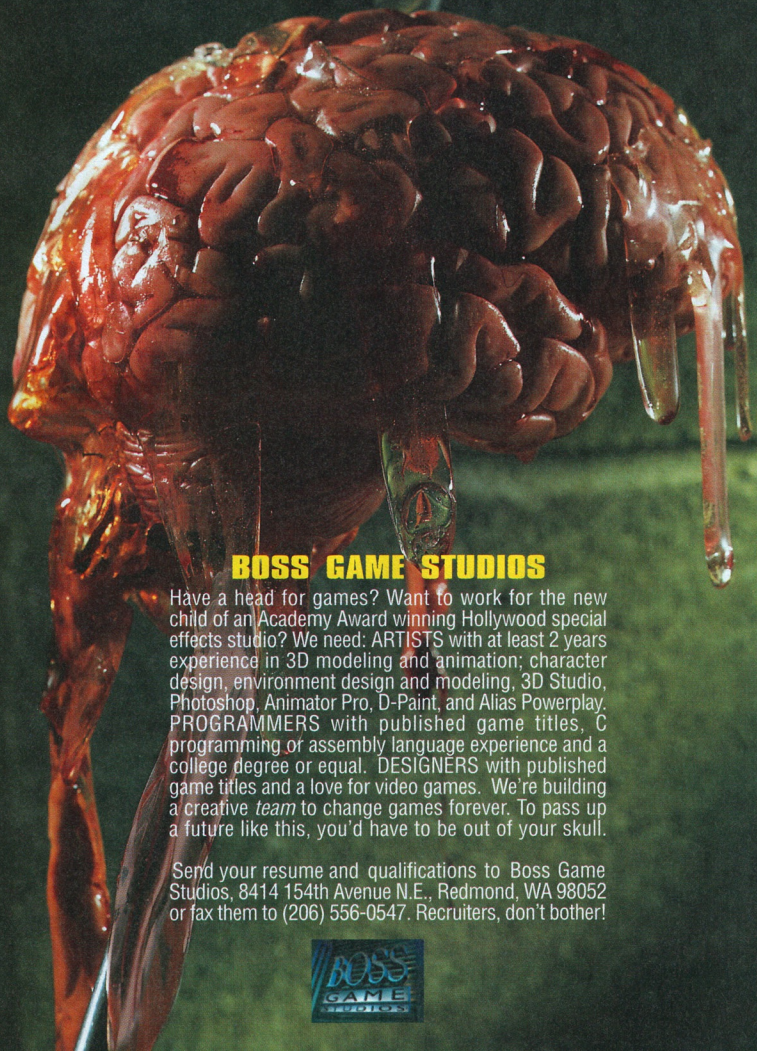
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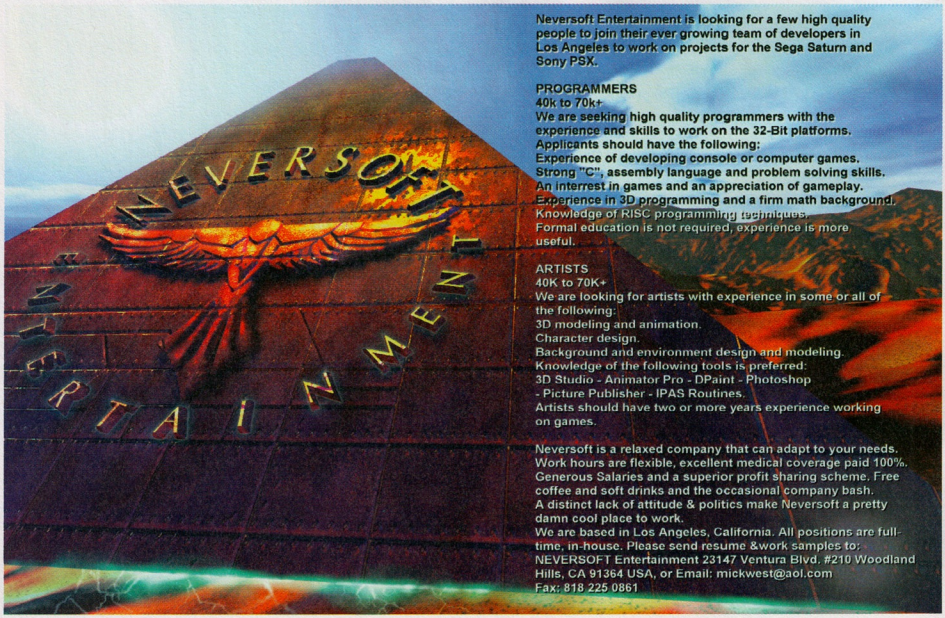
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Next Month



Next issue, NEXT Generation takes control of *Daytona USA* on the Saturn. For those sitting on the sidelines in the battle of the consoles, this AM2 release could prove to be the deciding factor.

NEXT Generation #7
on sale June 20, 1995.

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